Volume 2 Waste Stream Composition Study

Sustainable Materials Management Plan

2015

City of Tacoma
WASHINGTON

CASCADIA
CONSULTING GROUP

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Executive Summary

Objective

In 2015, the City of Tacoma commissioned Cascadia Consulting Group (Cascadia) to conduct a characterization study that examined the materials in the city's disposed waste and organics material streams. Cascadia has performed similar studies for the City of Tacoma in the past. In 2009, Cascadia conducted a characterization study for the disposed waste stream (before an organics collection program was available to residents). The objective of the study was to assess how the disposed waste stream has changed since the 2009 study, inform Tacoma's sustainable materials management plan and the assessment of Material Recovery facility (MRF) options, and collect residential organics set-out and composition data to assist the City in planning for increased organics diversion.

This report includes a summary of Cascadia's methodology for completing the study, and discusses both summary level and detailed study results.

Methodology

Cascadia's methodology for conducting this characterization study included the following steps:

Step 1. Develop a sampling plan.

§ Cascadia collaborated with city staff to define the "study universe." For this study, the universe included all disposed waste received at the Tacoma Recovery & Transfer Center and all organics from single-family curbside collection programs in the City of Tacoma. After defining the study universe, Cascadia:

- Divided Tacoma's disposed waste stream into substreams—residential, commercial, self-haul, and construction and demolition **(C&D)** materials. We divided each of these substreams further to provide more precise composition results:

  o **Residential:** Single-family, multifamily

  o **Commercial (non-C&D):** Commercial packer, commercial roll-off, and school waste

  o **Self-haul (non-C&D):** Residential, commercial

  o **Construction and Demolition Materials (C&D):** Commercial roll-off, residential self-haul, and commercial self-haul

- Defined 85 material types (for example, *newspaper*, *pizza boxes*, etc.) for characterizing disposed waste and 23 material types for characterizing organics.

- Scheduled sampling events over three seasons—spring, summer, and fall of 2015.

Step 2. Collect composition data.

Over three sampling events, Cascadia staff:

§ Hand-sorted 163 samples of residential and commercial (non-C&D) waste.

§ Visually characterized 255 samples of commercial C&D and self-haul (both non-C&D and C&D) waste.

§ Hand-sorted 180 samples of residential organics.

Step 3. Analyze data and produce a report documenting study methodology and findings.

Results

This section summarizes results from the study, in terms of both quantification and composition for waste and organics.

Disposed Waste Quantities

Table ES-1 depicts each substream's estimated contribution to the overall waste stream, by weight.

Table ES-1. Estimated Tons of Disposed Waste by Substream

Substream	Tons	Percent of Total
Residential	46,625	30%
Commercial (non-C&D)	60,647	38%
Self-haul (non-C&D)	30,103	19%
C&D	20,449	13%
Total	157,824	100%

Disposed Waste Composition Results

Figure ES-1 summarizes the composition results for Tacoma's overall waste stream by **material class**. Each *material type* identified for the study is assigned to a more general **material class**: for example, the *material type newspaper* is assigned to the **Paper material class**.

Figure ES-2 summarizes the recoverability of Tacoma's waste. Cascadia arrived at these recoverability estimates by collaborating with the City of Tacoma to assign each *material type* (for example, *newspaper*, *pizza boxes*) to a recoverability category. Recoverability categories for this study included curbside recyclables, recyclable paper, compostable, recyclable C&D and wood, potentially recoverable, and non-recoverable. Recoverability category assignments for each *material type* were based on the availability of recycling or composting opportunities in the Puget Sound area for each *material type*. Potentially recoverable materials are materials with recycling and composting opportunities that are not readily available. The assignment of *material types* to recoverability categories is shown in **Table 3-1**.

Figure ES-1. Overview of Overall Disposed Waste
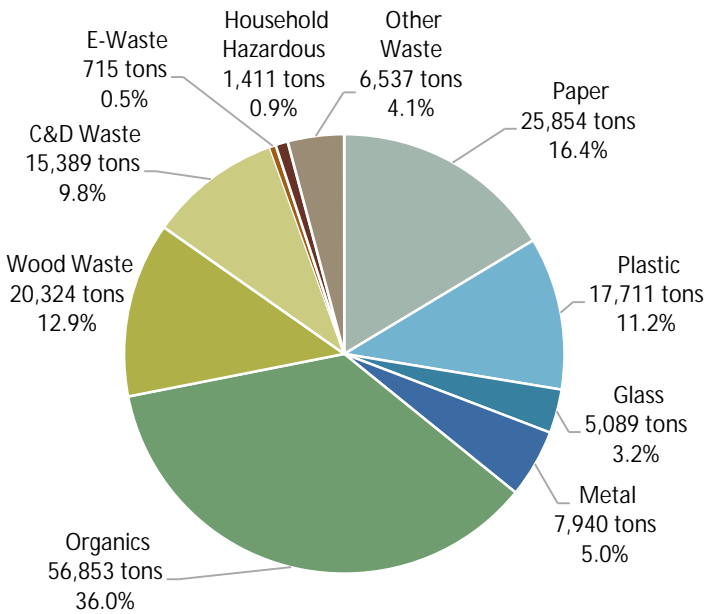
Figure ES-2. Summary of Recoverability of Overall Disposed Waste
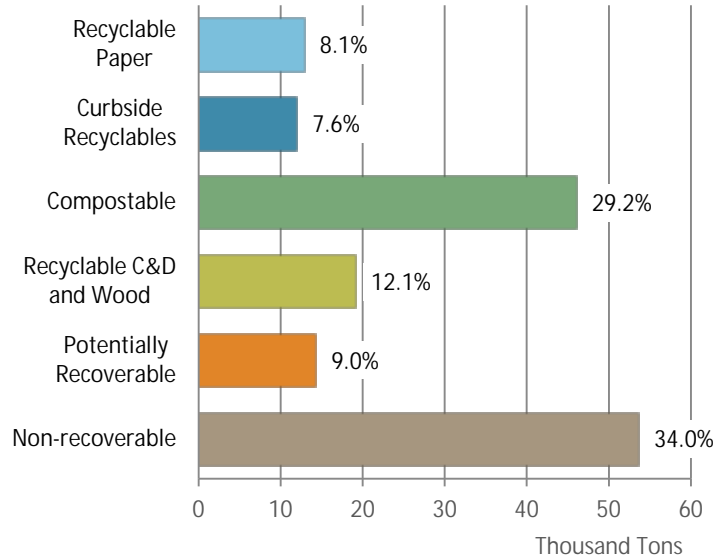
Organics (36.0%), **Paper** (16.4%), **Wood Waste** (12.9%), and **Plastic** (11.2%) are the most prevalent **material classes** in the overall disposed waste stream for Tacoma. Together, they make up over 75 percent of the stream.

In terms of recoverability, the most prevalent recoverability category is Non-Recoverable (34.0%) followed by Compostable (29.2%). Compostable materials represent the largest diversion opportunity, followed by Recyclable C&D and Wood (12.1%), Potentially Recoverable materials (9.0%), and Recyclable Paper (8.1%).

Key Findings

This section discusses the high level findings from this study. Detailed results that support these key findings are presented in the Findings section.

Overall Disposed Waste

§ **Organics**, **Paper,** and **Wood Waste** accounted for almost two thirds (65.3%) of overall waste disposed in Tacoma in 2015. **Organics** was the most prevalent **material class** and made up more than one third of the total waste disposed.

§ Two thirds (66%) of the overall disposed waste stream was Recoverable or Potentially Recoverable.

§ The most prevalent recoverability category was Compostable (29.2%). A large portion of the Compostable recoverability category was made up of *food waste, vegetative* and *other food*.

§ *Dimensional lumber, leaves and grass*, and *compostable/soiled paper* were also prominent *material types* in the disposed waste stream.

Residential Waste

§ Over half of the residential disposed waste stream was composed of **Organics**.

§ Recoverable or Potentially Recoverable materials accounted for almost two thirds (65.1%) of disposed residential waste.

§ The Compostable recoverability category made up a large portion of the materials considered recoverable. About three quarters of the materials in this recoverability category were *food waste, vegetative* and *other food*. Recyclable Paper and Curbside Recyclables accounted for almost one fifth (20%) of residential disposed waste.

§ More than one fifth (21.8%) of residential waste was *animal excrement/litter* or *disposable diapers.*

Commercial Waste (non-C&D)

§ **Paper**, **Plastic**, and **Organics** made up approximately 75 percent of Tacoma's commercial waste.

§ Recoverable or Potentially Recoverable materials constituted about 70 percent of commercial waste.

§ Compostable material was almost 36 percent of the commercial waste substream; a large portion of this material was *food waste, vegetative; other food;* and *compostable/soiled paper*.

§ Some of the most prevalent recoverable materials in the disposed commercial waste stream included *low-grade paper, leaves and grass*, and *uncoated OCC/Kraft paper.*

Self-haul (non-C&D)

§ **Organics** (24.9%) and **Wood Waste** (18.8%) were the largest **material classes** in non-C&D self-haul waste.

§ Recoverable or Potentially Recoverable materials accounted for approximately 65 percent of non-C&D self-haul waste, about half of which was Compostable material or Recyclable C&D and Wood.

§ The most prevalent *materials types* in non-C&D disposed self-haul waste were *furniture, leaves and grass*, and *prunings and trimmings.*

C&D

§ Tacoma's C&D waste stream consisted primarily of **Wood Waste** (42.6%) and **C&D Waste** (40.6%).

§ Recoverable or Potentially Recoverable materials accounted for almost 60 percent of disposed C&D, most of which was Recyclable C&D and Wood.

§ The most prevalent recoverable materials in the Disposed C&D stream were *dimensional lumber, pallets and crates,* and *engineered wood.* Other *material types* that were present in

large percentages, but are not recoverable materials, included *remainder/composite construction materials* and *painted wood*.

Single-family Curbside Organics Quantity and Composition

The City of Tacoma collected approximately 26,000 tons of organics through the single-family curbside collection program in 2015.

§ The single-family residential organics waste stream consisted primarily of Yard Waste (91.7%), specifically *leaves, grass, prunings, and trimmings* (91.2%).

§ Food waste accounted for less than five percent of the single family residential organics stream (3.7% was *food waste, vegetative* and 0.9% was *other food waste*)

§ Approximately three percent of the single-family residential organics stream was contaminant (non-compostable) material.

1.   Introduction and Objectives

The City of Tacoma has provided solid waste services to residents and businesses since 1929, when it became clear that the city's 18,000 residents needed a safer way to dispose of its ever growing municipal waste stream. Over the years, Tacoma's Solid Waste Management Division has gone beyond simply offering reliable garbage collection and disposal services, and now offers customers innovative ways to reduce, reuse, and recycle. In 1990, the Solid Waste Management Division implemented residential, commercial, and multifamily curbside recycling collection and residential yard waste collection. Currently, the city provides these services to about 50,000 single-family residential homes. They also provide garbage and recycling collection services to about 2,000 commercial customers and over 1,000 multifamily buildings. In April 2012, foodwaste was added to the single family curbside yardwaste "organics" program. May 1, 2015, yard and food waste pickup was offered to commercial customers. The residential curbside organic waste is taken to a composting facility. Commercial food waste is ground and transported to the central treatment plant via sewage lines as part of a pilot organics to energy program.

In 2015, the City of Tacoma commissioned Cascadia Consulting Group (Cascadia) to conduct a characterization study that examined the materials in the city's disposed waste and single family curbside organics material streams. In 2009, Cascadia conducted a characterization study for the disposed waste stream (before an organics collection program was available to residents). The objective of this study was to assess how the disposed waste stream has changed since the 2009 study, inform Tacoma's sustainable materials management plan and the assessment of MRF options, and collect single-family residential organics set-out and composition data to assist the City in planning for increased organics diversion.

Specifically, this composition study was designed to provide estimates of the composition of the City of Tacoma's overall disposed waste stream, as well as specific compostion estimates for disposed waste generated by the residential, commercial, and self-haul sectors.[1] The study also expanded upon the 2009 study by including a characterization of the organics set out by single-family residents for curbside collection. Cascadia Consulting Group partnered with Sky Valley Associates to conduct all field work.

Section 2 of this report summarizes the methodology Cascadia and Sky Valley used to conduct the composition study, and Section 3 presents key findings and waste composition results for each of the substreams analyzed. The appendices that follow the main body of the report provide additional detail on the study, including definitions of waste categories, an explanation of composition calculations, a complete explanation of the methodology, detailed composition results, and examples of field forms.

2. Summary of Methodology

Cascadia's approach to characterizing the City of Tacoma's disposed waste and single-family curbside residential organics streams consisted of the following three steps:

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[1] This study only assessed material going to the Tacoma Recovery & Transfer Center and did not include loads delivered directly to LRI Landfill, such as hospital, hard-to-handle, and certain industrial loads.

§ **Develop a sampling plan** to ensure a statistically sound and efficient approach for meeting the city's objectives.

§ **Collect composition data** through hand-sort and visual characterization methods.

§ **Analyze data and provide a report** to document findings of the study.

Each step of the study is summarized below. More detail on the study methodology is provided in **Appendix B: Sampling Methodology** and an explanation of the calculations used in the analysis is included in **Appendix C: Waste Composition Calculations.**

Develop Plan

Before starting field work, a sampling plan was developed that defined the material streams included in the study and characterization methods for each. The steps to developing a sampling plan are described in detail below.

Step 1: Identify Universe

The first step in planning a materials characterization study is to identify and carefully define the streams that will be studied. For the disposed waste portion of this study, the "universe" of waste included all loads of municipal solid waste (MSW) and contruction and demolition (C&D) materials entering the Tacoma Recovery & Transfer Center, including waste materials hauled by Tacoma Solid Waste Management and self-haul customers. For the "Organics" portion of this study, the "universe" included organic material that single-family residents placed in yard waste carts for curbside collection in the City of Tacoma.

Step 2: Define Material Substreams

Disposed Waste

When characterizing waste, dividing the universe of waste into substreams based on particular generation, collection, or geographic characteristics provides more detailed and accurate results. This study divided Tacoma's disposed waste stream into ten substreams as shown below:

Substreams	
Residential—waste generated from single-family homes and multifamily buildings that is collected and transported by the City of Tacoma.	**Single-family—**waste generated from single-family dwellings and duplexes.
	Multifamily—waste generated from residential buildings with three or more dwelling units, including large apartment or condo buildings.
Commercial—waste generated by businesses, industries (e.g., factories, farms), institutions, and government (e.g., highways, parks) that is collected and transported by City of Tacoma garbage collection trucks.	**Commercial Packer (MSW)—**waste generated by a business or industry that is generated from a <u>non-construction</u> activity and hauled by the City of Tacoma in a front load, side load, or rear load packer truck.
	Commercial Roll-off (MSW)—waste generated by a business or industry that is generated from a <u>non-construction</u> activity and hauled by the City of Tacoma in an open-top or compacted roll-off box.
	School Waste—waste generated and hauled by the Tacoma Public Schools.
Self-haul—waste that is a) generated at residences as well as businesses and institutions, and b) hauled by the household or business that generated the waste.	**Residential Self-haul (MSW)—**waste that is generated from a <u>non-construction</u> activity and hauled to the Tacoma Recovery and Transfer Center by a resident.
	Commercial Self-haul (MSW)—waste that is generated from a <u>non-construction</u> activity and hauled to the Tacoma Recovery and Transfer Center by a commercial enterprise (such as a landscaper), including waste from residential dwellings.
C&D—waste generated from a construction or demolition activity at a commercial site or residence that is self-hauled or collected by the City of Tacoma.	**Commercial Roll-off (C&D)—**Waste generated by a business or industry that is generated from a <u>construction activity</u> at a business or residence and hauled by the City of Tacoma in open top roll-off boxes.
	Residential Self-haul (C&D)—waste that is generated from a <u>construction</u> activity and hauled to the Tacoma Recovery and Transfer Center by a resident.
	Commercial Self-haul (C&D)—waste that is generated from a <u>construction</u> activity and hauled to the Tacoma Recovery and Transfer Center by a commercial enterprise (such as a contractor), including waste from residential dwellings.

Single Family Curbside Organics

The organics characterization study only covered one substream: single-family residential organics. This substream is defined as organics set out by single-family residents in yard waste containers for curbside collection by the City of Tacoma.

Step 3: Classify Disposed Waste and Single-family Curbside Organics

For sorting purposes, the study established 85 standard *material types* for the disposed waste stream that are listed and defined in **Appendix A: Definitions of Material Types**. The material list was designed to be comparable to the 2009 study; the current study includes additional paper and plastic material types to more clearly distinguish compostable, potentially compostable, and non-compostable materials in the disposed waste stream. The *material types* were organized into ten **material classes: Paper, Plastic, Glass, Metal, Organics, Wood, Construction Materials, E-Waste, Household Hazardous/Special Waste**, and **Other**.

For the single-family curbside organics stream, the study established 23 standard *material types* that are listed and defined in **Appendix A: Definitions of Material Types**. These were organized into three **material classes**: **Organics, Other Compostables**, and **Other Non-compostables**.

Step 4: Allocate Samples

This study was designed to provide composition estimates for each of the ten waste substreams, and the one single-family organics substream described above. **Table 2-1** and **Table 2-2** show the planned allocation of samples to each substream compared to the actual number of samples collected, sorted, and analyzed.

Table 2-1. Planned vs. Actual Waste Samples by Substream

Waste Substream	Planned Number of Samples	Actual Number of Samples	Difference (+/-)
Residential	**90**	**91**	**1**
Single-family	60	61	1
Multifamily	30	30	0
Commercial	**72**	**72**	**0**
Commercial packer	30	31	1
Commercial roll-off (MSW)	30	28	-2
School waste	12	13	1
Self-haul	**130**	**131**	**1**
Residential self-haul (MSW)	80	80	0
Commercial self-haul (MSW)	50	51	1
Construction & Demolition	**110**	**124**	**14**
Commercial roll-off (C&D)	40	38	-2
Residential self-haul (C&D)	20	36	16
Commercial self-haul (C&D)	50	50	0
Total	**402**	**418**	**16**

Table 2-2. Planned vs. Actual Organics Samples by Substream

Organics Substream	Planned Number of Samples	Actual Number of Samples	Difference (+/-)
Residential Single-family	180	180	0

Step 5: Determine Sampling Calendar

To capture seasonal variations in waste and organics generation and to correspond to the prior study, data collection was spread across three sampling events, each in a different season and consisting of six days of sampling. The three sampling events occurred on the following dates:

§ **Spring**—May 11 to 16, 2015
§ **Summer**—August 16 to 21, 2015
§ **Fall**—November 2 to 7, 2015

Samples were distributed evenly between events, and between each day of the week.

Collect Data

Implementing the sampling plan to collect data required coordinating with waste haulers, organics haulers, and facility staff, collecting samples and characterizing samples into the defined material types.

Step 1: Coordinate with Staff and Drivers

Before the scheduled fieldwork, the consultant team met with key staff at the Tacoma Recovery and Transfer Center to coordinate the sample collection, drop-off, and capture strategies and all other logistics involved with the field data collection effort. During each sampling event, route managers provided information used in route selection. Scalehouse staff assisted with the study by selecting self-haul vehicles for sampling and by collecting data on C&D loads.

Step 2: Collect and Characterize Samples

The sample selection and collection methods for both waste and organics samples are described in detail in **Appendix B: Sampling Methodology**. The sampling crew used either a hand-sorting procedure or a visual characterization procedure to sort samples. Hand-sorting is the preferred method for loads that tend toward homogeneity (residential and commercial MSW), whereas visual characterization is more effective when heavy, bulky, and highly variable materials are expected (self-haul and C&D loads). Utilizing these two methods in parallel leads to a more representative characterization of each load and, therefore, the waste stream as a whole.

Table 2-3 below shows which sampling procedure—hand-sorting or visual estimating—we applied to the various substreams.

Table 2-3: Sampling Procedure by Substream

Waste Substreams		Hand Sort	Visual Estimate
RESIDENTIAL	Single Family	x	
	Multifamily	x	
COMMERCIAL	Commercial Packer MSW	x	
	Commercial Roll-off MSW	x	
	School Waste	x	
SELF-HAUL	Residential MSW Self-haul		x
	Commercial MSW Self-haul		x
C&D	Commercial Roll-off C&D		x
	Residential C&D Self-haul		x
	Commercial C&D Self-haul		x
Organics Substreams		Hand Sort	Visual Estimate
RESIDENTIAL	Single Family	x	

Hand-sort Municipal Solid Waste

A total of 163 samples of residential, commercial (non-C&D), and school waste were characterized using a hand-sorting method. The field crew worked with facility staff to extract samples weighing approximately 200 pounds from selected loads, and sorted each sample into 85 *material types*. The field supervisor recorded the weight for each sorted *material type* and reviewed forms for accuracy. A full description of the hand-sorting procedure is included in **Appendix B: Sampling Methodology**.

Visually Characterize C&D and Self-Haul Waste

An additional 255 samples of C&D and self-haul waste were visually characterized. In the visual sampling method, a sample consisted of the entire load of materials delivered by the selected vehicle. This method is an efficient way to identify materials that may be present in large quantities, characterize waste loads that contain bulky items, and characterize waste streams in which materials are often not distributed evenly throughout individual vehicle loads (for example a construction load may be composed of wood in the front of the vehicle and roofing materials in the back, so a sample of only part of the load would not accurately represent the entire load).

The trained visual estimator first measured the volume of waste in each sample, then recorded the estimated percentage of the load corresponding to each of the 10 major material classes, and finally recorded the estimated percentages for each of the 85 *material types*. The visual sampling method is described in greater detail in **Appendix B: Sampling Methodology**.

Hand-sort Curbside Single-family Organics

A total of 180 samples of single-family residential organics were characterized using a hand-sorting method. A sample consisted of the entire contents of a randomly selected curbside organics cart. A sampling crew sorted samples into 23 *material types*. The field supervisor recorded the weight for each

sorted *material type* and reviewed the completed forms for accuracy. The hand sorting procedure used is the same as that for municipal solid waste samples.

Analyze and Draft Report

This section summarizes the analysis and reporting steps that occurred following the completion of field work.

Step 1: Determine Waste Quantities

The City of Tacoma provided information on the total tons of waste disposed annually at the Tacoma Recovery and Transfer Center and estimates for the specific tons of single-family, multifamily, commercial packer, and school waste disposed. Tonnage estimates for the remaining six substreams were derived by conducting vehicle surveys at the scalehouse and recording daily tons disposed in roll-off containers using tickets collected by the route supervisors. Refer to **Table 3-4** for a detailed list of substreams, including the tons associated with each substream.

Step 2: Enter and Analyze Data

Following the sampling event for each season, all data recorded on field forms was entered into a customized database and reviewed for data entry errors. Cascadia then calculated waste composition estimates using the methods described in **Appendix C: Waste Composition Calculations**.

Step 3: Draft Report

The final composition results and study methodology were documented and summarized in this report for the City of Tacoma. The findings from the disposed waste and curbside single-family organics study are provided in the section that follows.

3. Findings

Interpreting Results

The Disposed Waste Composition Results section presents characterization results for Tacoma's overall disposed waste stream as well as for the commercial, residential, self-hauled, and C&D substreams. The Organics Composition Results section presents characterization results for Tacoma's single-family curbside organics stream. Results by seasons and for single-family collection districts are presented in **Appendix D: Additional Composition Results**.

Disposed Waste characterization data are presented in four ways:

> **Material Designations**
>
> For the sake of clarity, broad classes such as **Paper**, **Glass**, and **Metal** are bolded and capitalized while material types such as *newspaper*, *clear glass containers*, and *tin food cans* are italicized.

- · A pie chart presents an overview of material composition by **Material Class**.
- · A bar chart depicts a summary of material composition by six recoverability categories: recyclable paper, curbside recyclables, compostable, recyclable C&D and wood, potentially recoverable, and non-recoverable. *Material types* were assigned to recoverability categories based on the availability of recycling or composting opportunities in the Puget Sound area. The assignment of waste *material types* to recoverability categories is shown in **Table 3-1**. Estimates for total recoverable materials are derived by summing composition estimates for Recyclable Paper, Recyclable C&D and Wood, Other Recyclables, and Compostable categories.
- · A table shows the ten most prevalent *material types* by weight.
- · A detailed table lists the full composition and quantity results for the 85 *material types*.

Single-family Curbside Organics characterization data are similarly presented in four ways:
- · A pie chart presents an overview of material composition by **Material Class**.
- · A bar chart depicts a summary of the composition by six recoverability categories: Food Waste, Yard Waste, Compostable Paper, Compostable Plastic, Other Compostable, and Contaminants. The assignment of organic *material types* to recoverability categories is shown in **Table 3-2**.
- · A table shows the five most prevalent *material types* by weight.
- · A detailed table lists the full composition and quantity results for the 23 *material types*.

Please refer to **Appendix A: Definitions of Material Types** for detailed descriptions and definitions of each *material type*.

Table 3-1. *Material Types* by Recoverability Categories – Waste[1] [2]

See page 21 for Table 3-1.

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[1] *(N)* indicates which *material types* were added for the 2015 study and were not included in the 2009 study.

[2] The project team considered current recycling markets when evaluating the *material types* at the start of the 2015 study and reclassified many as *potentially recoverable* instead of recyclable or *non-recoverable* instead of *potentially recoverable*.

Recoverability Category	Material Type
Curbside Recyclables	#1 PET Bottles
	#2 HDPE Bottles
	#1-#7 Other Containers
	Clean Shopping/Dry Cleaning Bags
	Clear Glass Containers
	Green Glass Containers
	Brown Glass Containers
	Aluminum Beverage Cans
	Aluminum Foil/Containers
	Other Non-ferrous
	Tin Food Cans
	Empty Aerosol Cans
	Other Ferrous
	Dry-cell Batteries
Recyclable C&D and Wood	Dimensional Lumber
	Pallets and Crates
	Engineered Wood
	Other Untreated Wood
	Concrete
	Clean Drywall
	Asphalt Paving
	Asphalt Shingles
	Soil, Rocks, and Sand
	Ceramics and Brick
Potentially Recoverable	Expanded Polystyrene Non-food Grade
	Other Clean PE Film
	Major Appliances
	Oil filters
	Remainder/Composite Metal
	Textiles and Clothing
	Carpet
	Carpet Padding
	Televisions and CRTs
	Computers and Flat Monitors
	Computer Peripherals
	Other Consumer Electronics
	Fluorescent Lighting
	Paints, Solvents, and Adhesives
	Wet-cell Batteries
	Motor Oil
	Tires
	Mattresses

Recoverability Category	Material Type
Recyclable Paper	Newspaper
	Uncoated OCC/Kraft Paper
	High-grade Paper
	Low-grade Paper
Compostable	Waxed OCC (N)
	Pizza Boxes (N)
	Compostable/Soiled Paper
	Pot. Comp. Single-use Food Service Paper (N)
	Pot. Comp. Single-use Food Service Plastic (N)
	Food Waste, Vegetative
	Other Food Waste
	Leaves and Grass
	Prunings and Trimmings
	Branches and Stumps
Non-recoverable	Non-comp. Single-use Food Service Paper (N)
	Remainder/Composite Paper
	Expanded Polystyrene Food grade
	Non-comp. Single-use Food Service Plastic (N)
	Other Film
	Durable Plastic Products
	Remainder/Composite Plastics
	Plate Glass
	Remainder/Composite Glass
	Disposable Diapers
	Animal Excrement/Litter
	Remainder/Composite Organic
	Painted Wood
	Treated Wood
	Remainder/Composite Wood
	Other Drywall
	Other Asphalt Roofing
	Insulation
	Remainder/Composite Construction
	Pesticides and Herbicides
	Asbestos
	Gasoline/Kerosene
	Vehicle and Equipment Fluids
	Medical Wastes
	Pharmaceuticals
	House Cleaners and Chemicals
	Other Potentially Hazardous
	Furniture
	Non-distinct Fines

Table 3-2. *Material Types* by Recoverability Categories – Single-family Curbside Organics

Recoverability Category	Material Type	Recoverability Category	Material Type
Food Waste	Food Waste, Vegetative Other Food Waste	Other Compostable	Other Compostable Organics
Yard Waste	Leaves, Grass, Prunings and Trimmings Branches and Stumps	Contaminants	Uncoated Corrugated Cardboard/Kraft Paper Mixed Recyclable Paper Recyclable Polycoated Paper Non-comp. Single-use Food Service Paper Recyclable Plastic Non-comp. Single-use Food Service Plastic Clean Shopping/Dry Cleaning Bags Other Non-compostable Film Recyclable Glass Recyclable Metal Animal Excrement And Litter Other Materials
Compostable Paper	Waxed Corrugated Cardboard Pizza Boxes Compostable Paper Newspaper Pot. Comp. Single-use Food Service Paper		
Compostable Plastic	Pot. Comp. Single-use Food Service Plastic		

Means and Error Ranges

Cascadia statistically analyzed the data from the sorting process to provide two pieces of information for each of the *material types*:

§ The estimated percent-by-weight composition of waste represented by the samples examined in this study.

§ The error ranges (+/-) of our composition estimates.

All error ranges (+/-) were calculated at the 90 percent confidence level. The equations used in these calculations appear in Appendix C: Waste Composition Calculations and were also applied to estimate the composition and error range of organics.

The example in **Table 3-3** below illustrates how the results can be interpreted. The best estimate of the amount of *compostable/soiled paper* present in the overall disposed waste stream is 4.2 percent. The figure 0.5 percent reflects the precision of the estimate. When calculations are performed at the 90 percent confidence level, we are 90 percent certain that the true mean for *compostable/soiled paper* is between 4.2 percent plus 0.5 percent and 4.2 percent minus 0.5 percent. In other words, we are 90 percent certain that the true mean lies between 3.7 percent and 4.7 percent.

> **Error Range (+/-)**
>
> An error range is used to measure the spread of values in a collection of data. For instance, if the quantities of *newspaper* were found to be nearly the same in each of the 418 waste samples collected for this study, then this would result in a very narrow error range. By contrast, if some samples are 75% *newspaper* and others have 0% *newspaper*, there will be a much broader error range.

Table 3-3. Example Percentage Composition and Error Range

Material	Est. Percent	+ / -
Compostable/Soiled Paper	4.2%	0.5%

Rounding

When interpreting the results presented in the tables and figures in this report, it is important to consider the effect of rounding.

To keep the waste composition tables and figures readable, estimated tonnages are rounded to the nearest ton, and estimated percentages are rounded to the nearest tenth of a percent. Due to this rounding, the tonnages presented in the report, when added together, may not exactly match the subtotals and totals shown. Similarly, the percentages, when added together, may not exactly match the subtotals or totals shown. Also, percentages less than 0.05 percent are rounded to 0.0 percent even though there may be weights associated with the material.

Waste Study

The results from the 2015 City of Tacoma waste characterization study are presented below. First, an overview of the tonnages of waste by substream is provided. Then, detailed characterization data for the overall waste and for the residential, commercial, self-haul, and C&D substreams are provided.

Waste Quantities

The Tacoma Recovery and Transfer Center received a total of 157,824 tons of waste in 2015. The allocation of disposed tonnage to substreams appears in **Table 3-4**. As shown, commercial waste was the largest substream, disposing of 38 percent of Tacoma's waste, followed by residential (30%) and self-haul (19%). C&D waste made up 13 percent of Tacoma's disposed waste during the study period.

Table 3-4. Estimated Tons of Disposed Waste by Substream

Substream	Tons	Percent of Total
Residential	**46,625**	**30%**
Single-family	*35,169*	*22%*
Multifamily	*11,456*	*7%*
Commercial	**60,647**	**39%**
Commercial packer	*23,186*	*15%*
Commercial roll-off (MSW)	*34,992*	*22%*
School waste	*2,468*	*2%*
Self-haul	**30,103**	**19%**
Residential self-haul (MSW)	*12,564*	*8%*
Commercial self-haul (MSW)	*17,540*	*11%*
C&D	**20,449**	***12%***
Commercial roll-off (C&D)	*6,494*	*4%*
Residential self-haul (C&D)	*2,287*	*1%*
Commercial self-haul (C&D)	*11,667*	*7%*
Total	**157,824**	**100%**

Disposed Waste Composition Results

This section presents composition results for Tacoma's overall disposed municipal waste stream. Results are also provided for the residential, commercial, self-haul, and C&D substreams overall, and for the groups within each substream as listed in **Table 3-5** below.

Table 3-5. Waste Composition Results Presented

Substream	
Residential	Single-family and multifamily
Commercial	Commercial packers (MSW), commercial roll-off (MSW), and school waste
Self-haul	Residential self-haul (MSW) and commercial self-haul (MSW)
C&D	commercial roll-off (C&D), residential self-haul (C&D), and commercial self-haul (C&D)

Additional detailed composition data by season and for single-family collection districts are presented in **Appendix E: Analysis of Results among Single-family Collection Districts**.

Overall Disposed Waste

Composition estimates by material class for the overall waste stream are presented in **Figure 3-1**. **Organics**, **Paper**, and **Wood Waste** accounted for nearly two thirds (65.3%) of the total.

Figure 3-2 shows the composition according to recoverability categories. Two thirds (66.0%) of the overall waste stream was estimated to be recoverable or potentially recoverable. The largest recoverable portion, Compostable materials, constituted approximately 29 percent of the total. More than 15 percent of the overall waste stream was Recyclable Paper or Curbside Recyclables .

Figure 3-1. Overview of Overall Disposed Waste

E-Waste 715 tons 0.5%
Household Hazardous 1,411 tons 0.9%
Other Waste 6,537 tons 4.1%
Paper 25,854 tons 16.4%
C&D Waste 15,389 tons 9.8%
Wood Waste 20,324 tons 12.9%
Plastic 17,711 tons 11.2%
Glass 5,089 tons 3.2%
Metal 7,940 tons 5.0%
Organics 56,853 tons 36.0%
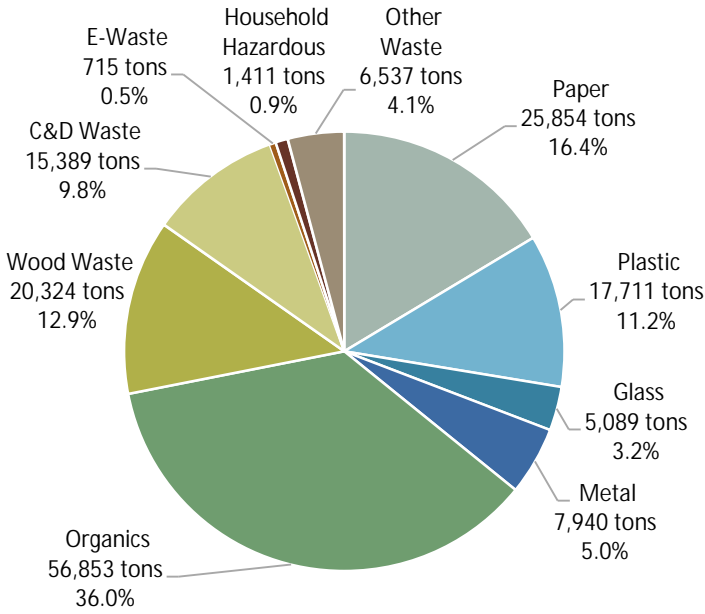
Figure 3-2. Summary of Recoverability of Overall Disposed Waste

Category	Percent
Recyclable Paper	8.1%
Curbside Recyclables	7.6%
Compostable	29.2%
Recyclable C&D and Wood	12.1%
Potentially Recoverable	9.0%
Non-recoverable	34.0%

Thousand Tons
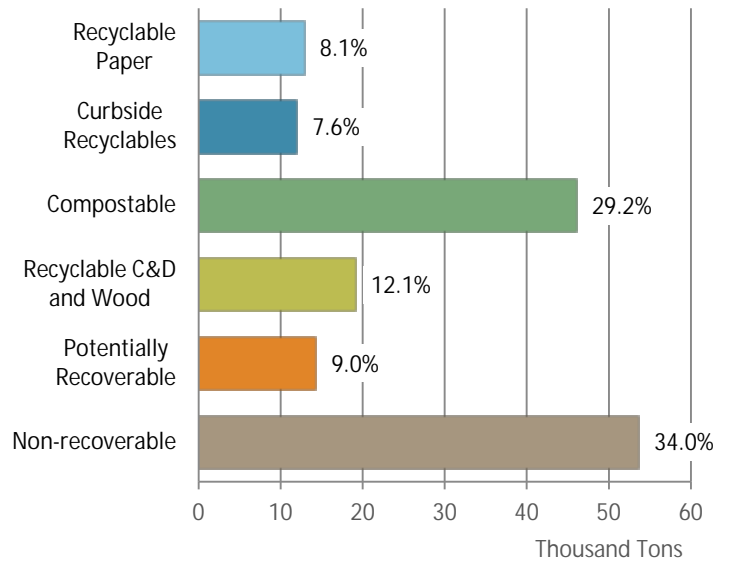
As shown **Table 3-6**, the two most prevalent *material types—food waste, vegetative* and *other food waste*—accounted for almost 18% of the overall waste stream.

Table 3-6. Ten Most Prevalent *Materials Types* in Overall Disposed Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Food Waste, Vegetative	12.6%	12.6%	19,815
Other Food Waste	5.3%	17.8%	8,338
Dimensional Lumber	4.5%	22.3%	7,051
Leaves and Grass	4.3%	26.6%	6,774
Compostable/Soiled Paper	4.2%	30.8%	6,571
Animal Excrement/Litter	3.9%	34.7%	6,203
Other Film	3.9%	38.5%	6,078
Disposable Diapers	3.6%	42.2%	5,735
Low-grade Paper	3.3%	45.5%	5,264
Textiles and Clothing	3.2%	48.7%	5,102
Total	**48.7%**		**76,930**

Table 3-7 presents detailed composition results by *material type*.

Table 3-7. Detailed Disposed Waste Composition Results: Overall

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**16.4%**		**25,854**	**Wood Waste**	**12.9%**		**20,324**
Newspaper	1.1%	0.2%	1,704	Dimensional Lumber	4.5%	1.3%	7,051
Uncoated OCC/Kraft Paper	2.8%	0.6%	4,498	Pallets and Crates	1.9%	1.1%	3,048
High-grade Paper	0.9%	0.2%	1,395	Engineered Wood	1.8%	0.9%	2,899
Low-grade Paper	3.3%	0.5%	5,264	Other Untreated Wood	0.5%	0.3%	730
Waxed OCC	0.2%	0.2%	285	Painted Wood	2.4%	0.7%	3,807
Pizza Boxes	0.2%	0.0%	237	Treated Wood	1.0%	0.4%	1,526
Compostable/Soiled Paper	4.2%	0.5%	6,571	Remainder/Composite Wood	0.8%	0.4%	1,264
Pot. Comp. Single-use Food Service Paper	0.7%	0.1%	1,067				
Non-comp. Single-use Food Service Paper	0.3%	0.1%	540	**C&D Waste**	**9.8%**		**15,389**
Remainder/Composite Paper	2.7%	1.0%	4,294	Concrete	0.8%	0.4%	1,341
				Clean Drywall	0.2%	0.2%	362
Plastic	**11.2%**		**17,711**	Other Drywall	1.3%	0.4%	1,982
#1 PET Bottles	0.9%	0.4%	1,404	Asphalt Paving	0.0%	0.0%	19
#2 HDPE Bottles	0.4%	0.1%	610	Asphalt Shingles	0.5%	0.4%	855
#1-#7 Other Containers	0.7%	0.1%	1,099	Other Asphalt Roofing	0.5%	0.4%	845
Expanded Polystyrene Food grade	0.3%	0.1%	501	Insulation	0.1%	0.1%	213
Expanded Polystyrene Non-food Grade	0.2%	0.1%	253	Carpet	1.2%	0.5%	1,844
Pot. Comp. Single-use Food Service Plastic	0.2%	0.1%	243	Carpet Padding	0.2%	0.1%	286
Non-comp. Single-use Food Service Plastic	0.3%	0.1%	473	Soil, Rocks, and Sand	1.4%	0.7%	2,131
Clean Shopping/Dry Cleaning Bags	0.3%	0.0%	534	Ceramics and Brick	0.4%	0.3%	683
Other Clean PE Film	0.7%	0.4%	1,055	Remainder/Composite Construction	3.1%	1.5%	4,829
Other Film	3.9%	0.4%	6,078				
Durable Plastic Products	1.6%	0.5%	2,451	**E-Waste**	**0.5%**		**715**
Remainder/Composite Plastics	1.9%	0.9%	3,011	Televisions and CRTs	0.3%	0.4%	520
				Computers and Flat Monitors	0.0%	0.0%	60
Glass	**3.2%**		**5,089**	Computer Peripherals	0.0%	0.0%	11
Clear Glass Containers	0.9%	0.2%	1,444	Other Consumer Electronics	0.1%	0.1%	123
Green Glass Containers	0.3%	0.1%	487				
Brown Glass Containers	0.6%	0.2%	1,021	**Household Hazardous**	**0.9%**		**1,411**
Plate Glass	0.3%	0.3%	483	Pesticides and Herbicides	0.0%	0.0%	4
Remainder/Composite Glass	1.0%	0.6%	1,653	Fluorescent Lighting	0.0%	0.0%	4
				Asbestos	0.0%	0.0%	0
Metal	**5.0%**		**7,940**	Paints, Solvents, and Adhesives	0.1%	0.1%	119
Aluminum Beverage Cans	0.3%	0.1%	449	Dry-cell Batteries	0.0%	0.0%	65
Aluminum Foil/Containers	0.1%	0.0%	208	Wet-cell Batteries	0.0%	0.0%	15
Other Non-ferrous	0.4%	0.2%	669	Gasoline/Kerosene	0.0%	0.0%	5
Tin Food Cans	0.4%	0.1%	613	Motor Oil	0.0%	0.0%	5
Empty Aerosol Cans	0.2%	0.1%	239	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.4%	0.4%	571	Medical Wastes	0.7%	0.8%	1,063
Oil Filters	0.0%	0.0%	36	Pharmaceuticals	0.0%	0.0%	18
Other Ferrous	2.0%	0.7%	3,092	House Cleaners and Chemicals	0.1%	0.1%	104
Remainder/Composite Metal	1.3%	0.5%	2,064	Other Potentially Hazardous	0.0%	0.0%	9
Organics	**36.0%**		**56,853**	**Other Waste**	**4.1%**		**6,537**
Food Waste, Vegetative	12.6%	1.2%	19,815	Furniture	2.3%	1.1%	3,566
Other Food Waste	5.3%	0.7%	8,338	Tires	0.0%	0.0%	10
Leaves and Grass	4.3%	1.2%	6,774	Mattresses	1.4%	1.2%	2,188
Prunings and Trimmings	1.6%	0.8%	2,562	Non-distinct Fines	0.5%	0.3%	773
Branches and Stumps	0.1%	0.1%	145				
Textiles and Clothing	3.2%	0.6%	5,102				
Disposable Diapers	3.6%	0.4%	5,735				
Animal Excrement/Litter	3.9%	0.6%	6,203	**Totals**	**100.0%**		**157,824**
Remainder/Composite Organic	1.4%	0.7%	2,179	Sample Count			418

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Residential Disposed Waste

Overall Residential

As shown in **Figure 3-3**, more than half (58.3%) of residential waste was composed of **Organics**. **Paper** and **Plastic** accounted for nearly an additional third (30.7%) of the waste. **Figure 3-4** summarizes the recoverability of materials found in the residential waste stream. Almost two thirds (65.1%) of this stream was recoverable or potentially recoverable, with the largest fraction made up of Compostable materials (37.7%). Almost one fifth of disposed residential waste was Curbside Recyclables and Recyclable Paper (19.0% combined).

Figure 3-3. Overview of Overall Residential Disposed Waste
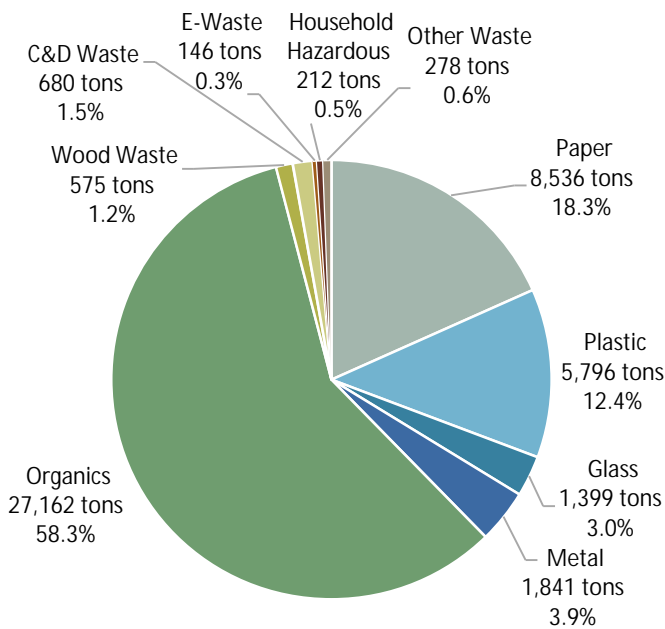
Figure 3-4. Summary of Recoverability of Overall Residential Disposed Waste
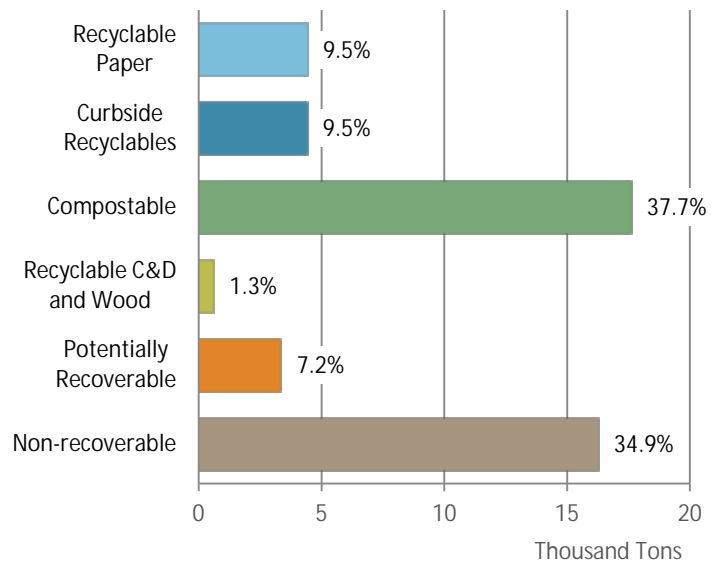
As presented in **Table 3-8**, the largest *material type*, *food waste, vegetative,* constituted nearly one-fifth (19.3%) of the residential waste by weight. *Animal excrement/litter* and *disposable diapers*, together, accounted for an additional fifth (21.8%) of the residential waste stream.

Table 3-8. Ten Most Prevalent *Materials Types* in the Overall Residential Disposed Waste Stream

Material	Est. Percent	Cum. Percent	Est. Tons
Food Waste, Vegetative	19.3%	19.3%	8,997
Animal Excrement/Litter	11.2%	30.5%	5,223
Disposable Diapers	10.6%	41.1%	4,929
Other Food Waste	8.8%	49.9%	4,121
Compostable/Soiled Paper	6.0%	55.9%	2,794
Other Film	5.3%	61.2%	2,467
Low-grade Paper	5.1%	66.3%	2,375
Textiles and Clothing	5.0%	71.3%	2,338
Leaves and Grass	2.1%	73.4%	979
Uncoated OCC/Kraft Paper	1.7%	75.1%	803
Total	**75.1%**		**35,025**

Table 3-9 presents detailed composition results for overall residential disposed waste by *material type*.

Table 3-9. Detailed Disposed Waste Composition Results: Overall Residential

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**18.3%**		**8,536**	**Wood Waste**	**1.2%**		**575**
Newspaper	1.6%	0.3%	739	Dimensional Lumber	0.3%	0.1%	117
Uncoated OCC/Kraft Paper	1.7%	0.3%	803	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	1.1%	0.3%	496	Engineered Wood	0.1%	0.1%	50
Low-grade Paper	5.1%	0.4%	2,375	Other Untreated Wood	0.2%	0.1%	87
Waxed OCC	0.0%	0.0%	4	Painted Wood	0.4%	0.2%	172
Pizza Boxes	0.3%	0.1%	150	Treated Wood	0.1%	0.1%	62
Compostable/Soiled Paper	6.0%	0.5%	2,794	Remainder/Composite Wood	0.2%	0.2%	87
Pot. Comp. Single-use Food Service Paper	1.0%	0.2%	446				
Non-comp. Single-use Food Service Paper	0.5%	0.1%	222	**C&D Waste**	**1.5%**		**680**
Remainder/Composite Paper	1.1%	0.2%	509	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**12.4%**		**5,796**	Other Drywall	0.3%	0.4%	140
#1 PET Bottles	1.1%	0.1%	529	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.6%	0.1%	293	Asphalt Shingles	0.1%	0.2%	65
#1-#7 Other Containers	1.4%	0.2%	630	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.6%	0.1%	261	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.0%	50	Carpet	0.2%	0.1%	89
Pot. Comp. Single-use Food Service Plastic	0.2%	0.0%	73	Carpet Padding	0.1%	0.1%	37
Non-comp. Single-use Food Service Plastic	0.3%	0.1%	146	Soil, Rocks, and Sand	0.4%	0.4%	207
Clean Shopping/Dry Cleaning Bags	0.8%	0.1%	394	Ceramics and Brick	0.2%	0.1%	80
Other Clean PE Film	0.1%	0.0%	24	Remainder/Composite Construction	0.1%	0.1%	62
Other Film	5.3%	0.4%	2,467				
Durable Plastic Products	1.1%	0.2%	531	**E-Waste**	**0.3%**		**146**
Remainder/Composite Plastics	0.9%	0.3%	399	Televisions and CRTs	0.1%	0.2%	60
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**3.0%**		**1,399**	Computer Peripherals	0.0%	0.0%	11
Clear Glass Containers	1.3%	0.2%	595	Other Consumer Electronics	0.2%	0.1%	75
Green Glass Containers	0.5%	0.1%	229				
Brown Glass Containers	0.8%	0.2%	381	**Household Hazardous**	**0.5%**		**212**
Plate Glass	0.0%	0.0%	9	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.4%	0.1%	185	Fluorescent Lighting	0.0%	0.0%	4
				Asbestos	0.0%	0.0%	0
Metal	**3.9%**		**1,841**	Paints, Solvents, and Adhesives	0.2%	0.2%	114
Aluminum Beverage Cans	0.4%	0.1%	207	Dry-cell Batteries	0.0%	0.0%	19
Aluminum Foil/Containers	0.3%	0.1%	147	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.2%	0.1%	93	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.8%	0.1%	360	Motor Oil	0.0%	0.0%	5
Empty Aerosol Cans	0.2%	0.1%	80	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.3%	0.5%	133	Medical Wastes	0.1%	0.1%	28
Oil Filters	0.0%	0.0%	4	Pharmaceuticals	0.0%	0.0%	9
Other Ferrous	1.0%	0.3%	454	House Cleaners and Chemicals	0.1%	0.0%	33
Remainder/Composite Metal	0.8%	0.2%	363	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**58.3%**		**27,162**	**Other Waste**	**0.6%**		**278**
Food Waste, Vegetative	19.3%	1.0%	8,997	Furniture	0.1%	0.1%	41
Other Food Waste	8.8%	1.0%	4,121	Tires	0.0%	0.0%	5
Leaves and Grass	2.1%	0.9%	979	Mattresses	0.1%	0.1%	31
Prunings and Trimmings	0.0%	0.0%	11	Non-distinct Fines	0.4%	0.2%	201
Branches and Stumps	0.1%	0.1%	24				
Textiles and Clothing	5.0%	0.8%	2,338				
Disposable Diapers	10.6%	1.0%	4,929				
Animal Excrement/Litter	11.2%	1.2%	5,223	**Totals**	**100.0%**		**46,625**
Remainder/Composite Organic	1.2%	0.3%	541	Sample Count			91

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Single-family

As shown in **Figure 3-5**, more than half (59.3%) of single-family residential disposed waste was composed of **Organics**. **Paper** and **Plastic** accounted for almost an additional third (30.5%) of single-family residential waste. **Figure 3-6** summarizes the recoverability of materials measured in the waste. More than one third (36.6%) of the single-family substream was Non-recoverable material, and nearly one fifth (19.6%) of the stream was recyclable (Recyclable Paper, Curbside Recyclables, and Recyclable C&D and Wood). Compostable materials were the most prevalent recoverable material category (37.2%).

Figure 3-5. Overview of Single-family Residential Disposed Waste
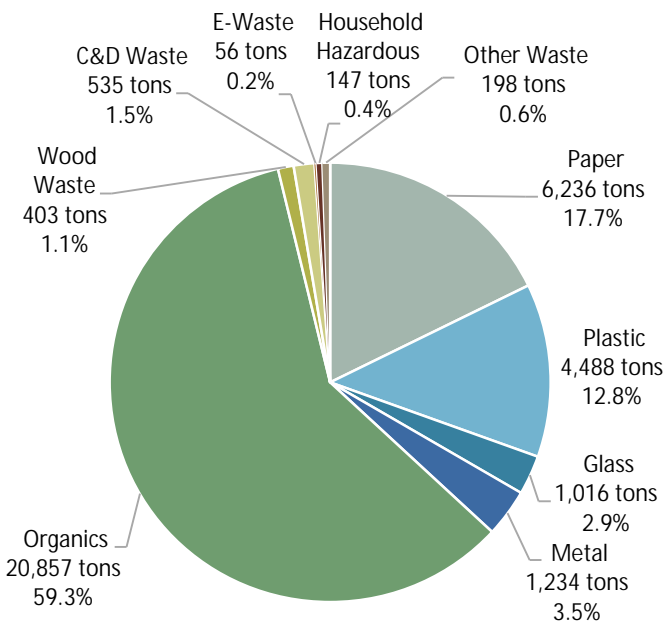
Figure 3-6. Summary of Recoverability of Single-family Residential Disposed Waste
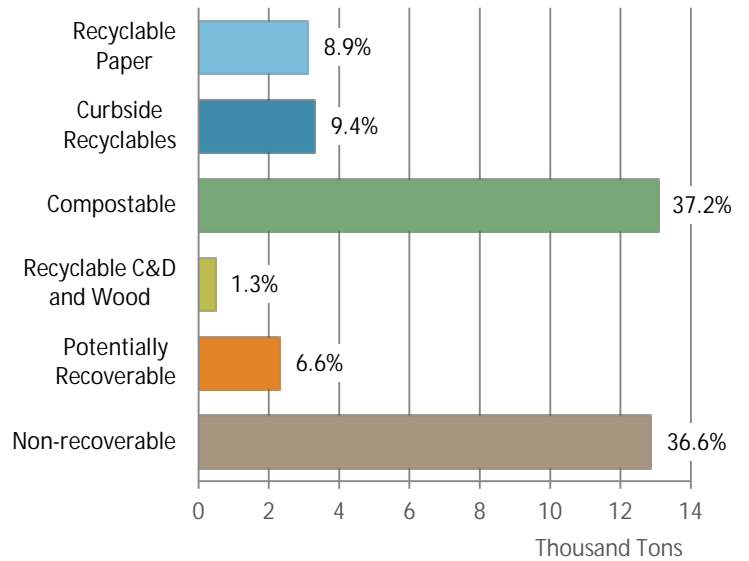
As presented in **Table 3-10**, the most prevalent *material type* in this stream was *food waste, vegetative* (19.3% of single-family disposed residential waste). *Animal excrement/litter* and *disposable diapers*, together, accounted for almost an additional quarter (23.5%) of the single-family disposed waste stream.

Table 3-10. Ten Most Prevalent *Materials Types* in Single-family Residential Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Food Waste, Vegetative	19.3%	19.3%	6,778
Animal Excrement/Litter	12.9%	32.2%	4,529
Disposable Diapers	10.6%	42.7%	3,717
Other Food Waste	8.9%	51.6%	3,138
Compostable/Soiled Paper	5.7%	57.4%	2,018
Other Film	5.6%	63.0%	1,976
Low-grade Paper	5.0%	68.0%	1,760
Textiles and Clothing	4.9%	72.9%	1,723
Leaves and Grass	1.7%	74.6%	591
Newspaper	1.5%	76.1%	536
Total	76.1%		26,767

Table 3-11 presents detailed composition results for single-family residential disposed waste by *material type*.

Table 3-11. Detailed Disposed Waste Composition Results: Single-family Residential

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**17.7%**		**6,236**	**Wood Waste**	**1.1%**		**403**
Newspaper	1.5%	0.3%	536	Dimensional Lumber	0.3%	0.2%	96
Uncoated OCC/Kraft Paper	1.2%	0.2%	438	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	1.1%	0.3%	380	Engineered Wood	0.1%	0.0%	22
Low-grade Paper	5.0%	0.5%	1,760	Other Untreated Wood	0.2%	0.1%	69
Waxed OCC	0.0%	0.0%	3	Painted Wood	0.4%	0.2%	146
Pizza Boxes	0.3%	0.1%	114	Treated Wood	0.1%	0.2%	40
Compostable/Soiled Paper	5.7%	0.7%	2,018	Remainder/Composite Wood	0.1%	0.1%	31
Pot. Comp. Single-use Food Service Paper	1.1%	0.2%	374				
Non-comp. Single-use Food Service Paper	0.6%	0.2%	193	**C&D Waste**	**1.5%**		**535**
Remainder/Composite Paper	1.2%	0.2%	420	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**12.8%**		**4,488**	Other Drywall	0.4%	0.5%	137
#1 PET Bottles	1.1%	0.1%	380	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.6%	0.1%	213	Asphalt Shingles	0.2%	0.2%	65
#1-#7 Other Containers	1.4%	0.2%	507	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.6%	0.1%	211	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.0%	30	Carpet	0.2%	0.2%	62
Pot. Comp. Single-use Food Service Plastic	0.1%	0.0%	51	Carpet Padding	0.0%	0.1%	14
Non-comp. Single-use Food Service Plastic	0.3%	0.1%	118	Soil, Rocks, and Sand	0.5%	0.5%	163
Clean Shopping/Dry Cleaning Bags	0.9%	0.1%	306	Ceramics and Brick	0.2%	0.2%	54
Other Clean PE Film	0.1%	0.1%	18	Remainder/Composite Construction	0.1%	0.1%	39
Other Film	5.6%	0.6%	1,976				
Durable Plastic Products	1.1%	0.3%	383	**E-Waste**	**0.2%**		**56**
Remainder/Composite Plastics	0.8%	0.4%	294	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**2.9%**		**1,016**	Computer Peripherals	0.0%	0.0%	11
Clear Glass Containers	1.2%	0.2%	409	Other Consumer Electronics	0.1%	0.1%	46
Green Glass Containers	0.5%	0.2%	171				
Brown Glass Containers	1.0%	0.2%	347	**Household Hazardous**	**0.4%**		**147**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.3%	0.1%	88	Fluorescent Lighting	0.0%	0.0%	1
				Asbestos	0.0%	0.0%	0
Metal	**3.5%**		**1,234**	Paints, Solvents, and Adhesives	0.3%	0.3%	93
Aluminum Beverage Cans	0.4%	0.1%	140	Dry-cell Batteries	0.1%	0.0%	18
Aluminum Foil/Containers	0.3%	0.1%	110	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.2%	0.1%	86	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.8%	0.1%	285	Motor Oil	0.0%	0.0%	5
Empty Aerosol Cans	0.2%	0.1%	63	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	1
Oil Filters	0.0%	0.0%	4	Pharmaceuticals	0.0%	0.0%	9
Other Ferrous	0.8%	0.3%	274	House Cleaners and Chemicals	0.1%	0.0%	20
Remainder/Composite Metal	0.8%	0.3%	272	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**59.3%**		**20,857**	**Other Waste**	**0.6%**		**198**
Food Waste, Vegetative	19.3%	1.2%	6,778	Furniture	0.0%	0.0%	0
Other Food Waste	8.9%	1.1%	3,138	Tires	0.0%	0.0%	5
Leaves and Grass	1.7%	0.7%	591	Mattresses	0.1%	0.2%	31
Prunings and Trimmings	0.0%	0.0%	7	Non-distinct Fines	0.5%	0.2%	162
Branches and Stumps	0.1%	0.1%	24				
Textiles and Clothing	4.9%	0.9%	1,723				
Disposable Diapers	10.6%	1.1%	3,717				
Animal Excrement/Litter	12.9%	1.6%	4,529	**Totals**	**100.0%**		**35,169**
Remainder/Composite Organic	1.0%	0.2%	349	Sample Count			61

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Multifamily

As shown in **Figure 3-7**, more than half (55.0%) of the multifamily residential disposed waste stream was composed of **Organics**. **Paper** and **Plastic** accounted for almost an additional third (31.5%) of multifamily waste. **Figure 3-8** demonstrates that recoverable and potentially recoverable materials, in total, accounted for about 70 percent of this waste. Compostables made up the largest fraction of recoverable material (39.3%), and recyclable materials (Recyclable Paper, Curbside Recyclables, and Recyclable C&D and Wood) were an additional 22 percent.

Figure 3-7. Overview of Multifamily Residential Disposed Waste
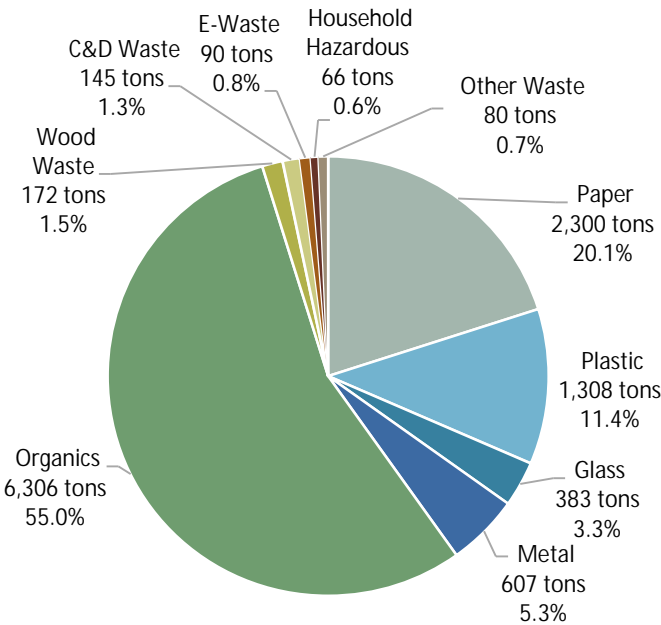
Figure 3-8. Summary of Recoverability of Multifamily Residential Disposed Waste
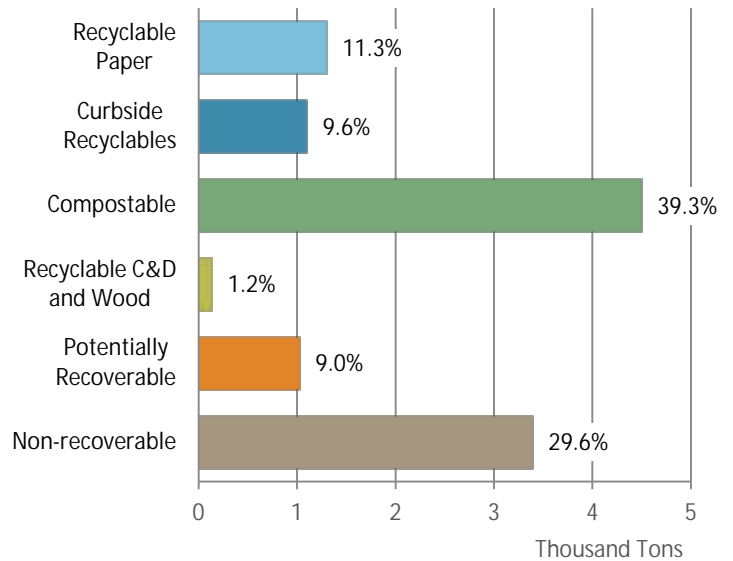
Table 3-12 shows that the largest *material type*, *food waste, vegetative*, constituted nearly one-fifth (19.4%) of the multifamily residential disposed waste by weight. The other two largest *material types* found in multifamily waste were *disposable diapers* (10.6%) and *other food waste* (8.6%).

Table 3-12. Ten Most Prevalent *Materials Types* in Multifamily Residential Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Food Waste, Vegetative	19.4%	19.4%	2,219
Disposable Diapers	10.6%	29.9%	1,212
Other Food Waste	8.6%	38.5%	983
Compostable/Soiled Paper	6.8%	45.3%	775
Animal Excrement/Litter	6.1%	51.4%	694
Low-grade Paper	5.4%	56.7%	615
Textiles and Clothing	5.4%	62.1%	615
Other Film	4.3%	66.4%	491
Leaves and Grass	3.4%	69.8%	388
Uncoated OCC/Kraft Paper	3.2%	72.9%	365
Total	**72.9%**		**8,357**

Table 3-13 presents detailed composition results for the multifamily residential substream by *material type*.

Table 3-13. Detailed Disposed Waste Composition Results: Multifamily Residential

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**20.1%**		**2,300**	**Wood Waste**	**1.5%**		**172**
Newspaper	1.8%	0.5%	203	Dimensional Lumber	0.2%	0.2%	21
Uncoated OCC/Kraft Paper	3.2%	0.9%	365	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	1.0%	0.4%	116	Engineered Wood	0.2%	0.3%	28
Low-grade Paper	5.4%	1.0%	615	Other Untreated Wood	0.2%	0.1%	18
Waxed OCC	0.0%	0.0%	2	Painted Wood	0.2%	0.1%	26
Pizza Boxes	0.3%	0.1%	36	Treated Wood	0.2%	0.3%	23
Compostable/Soiled Paper	6.8%	0.7%	775	Remainder/Composite Wood	0.5%	0.6%	57
Pot. Comp. Single-use Food Service Paper	0.6%	0.2%	71				
Non-comp. Single-use Food Service Paper	0.2%	0.1%	28	**C&D Waste**	**1.3%**		**145**
Remainder/Composite Paper	0.8%	0.3%	89	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**11.4%**		**1,308**	Other Drywall	0.0%	0.0%	3
#1 PET Bottles	1.3%	0.3%	149	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.7%	0.2%	80	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	1.1%	0.3%	122	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.4%	0.1%	50	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.2%	0.1%	20	Carpet	0.2%	0.4%	27
Pot. Comp. Single-use Food Service Plastic	0.2%	0.1%	22	Carpet Padding	0.2%	0.3%	23
Non-comp. Single-use Food Service Plastic	0.2%	0.1%	28	Soil, Rocks, and Sand	0.4%	0.4%	44
Clean Shopping/Dry Cleaning Bags	0.8%	0.2%	88	Ceramics and Brick	0.2%	0.3%	26
Other Clean PE Film	0.0%	0.0%	5	Remainder/Composite Construction	0.2%	0.3%	22
Other Film	4.3%	0.6%	491				
Durable Plastic Products	1.3%	0.4%	148	**E-Waste**	**0.8%**		**90**
Remainder/Composite Plastics	0.9%	0.5%	106	Televisions and CRTs	0.5%	0.9%	60
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**3.3%**		**383**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	1.6%	0.4%	186	Other Consumer Electronics	0.3%	0.4%	30
Green Glass Containers	0.5%	0.4%	57				
Brown Glass Containers	0.3%	0.1%	33	**Household Hazardous**	**0.6%**		**66**
Plate Glass	0.1%	0.1%	9	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.8%	0.3%	97	Fluorescent Lighting	0.0%	0.0%	3
				Asbestos	0.0%	0.0%	0
Metal	**5.3%**		**607**	Paints, Solvents, and Adhesives	0.2%	0.2%	21
Aluminum Beverage Cans	0.6%	0.2%	67	Dry-cell Batteries	0.0%	0.0%	1
Aluminum Foil/Containers	0.3%	0.1%	37	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.1%	0.0%	7	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.7%	0.1%	75	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.2%	0.1%	18	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	1.2%	1.9%	133	Medical Wastes	0.2%	0.3%	27
Oil Filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	1.6%	1.0%	181	House Cleaners and Chemicals	0.1%	0.1%	13
Remainder/Composite Metal	0.8%	0.4%	90	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**55.0%**		**6,306**	**Other Waste**	**0.7%**		**80**
Food Waste, Vegetative	19.4%	2.1%	2,219	Furniture	0.4%	0.6%	41
Other Food Waste	8.6%	2.0%	983	Tires	0.0%	0.0%	0
Leaves and Grass	3.4%	2.8%	388	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	4	Non-distinct Fines	0.3%	0.4%	39
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	5.4%	1.3%	615				
Disposable Diapers	10.6%	2.0%	1,212				
Animal Excrement/Litter	6.1%	1.3%	694	**Totals**	**100.0%**		**11,456**
Remainder/Composite Organic	1.7%	0.8%	191	Sample Count			30

*Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.*

Commercial Waste

Overall Commercial

As shown in **Figure 3-9**, approximately three-quarters of the overall commercial disposed waste stream was composed of **Organics**, **Paper**, and **Plastic**. **Figure 3-10** demonstrates that recoverable and potentially recoverable materials, in total, accounted for approximately 70 percent of this waste. Compostable materials made up the largest recoverable fraction (35.6%), and Recyclable Paper and Curbside Recyclables, combined, contributed 19 percent.

Figure 3-9. Overview of
Overall Commercial Disposed Waste
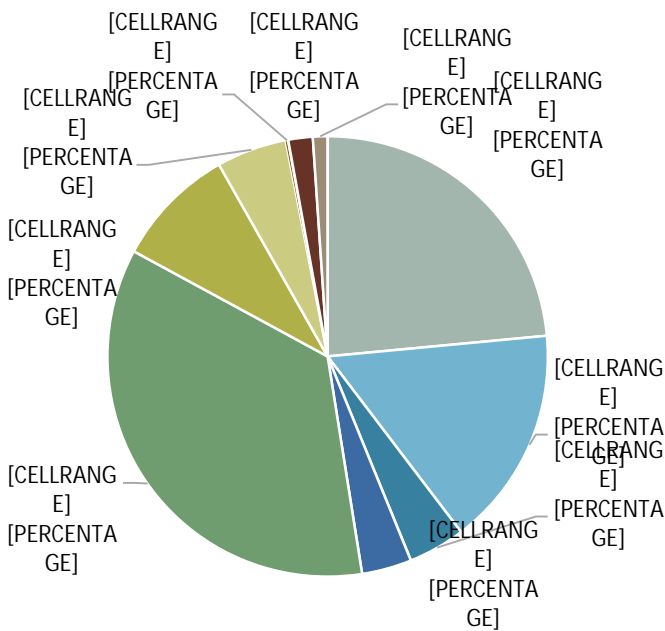
Figure 3-10. Summary of Recoverability of
Overall Commercial Disposed Waste
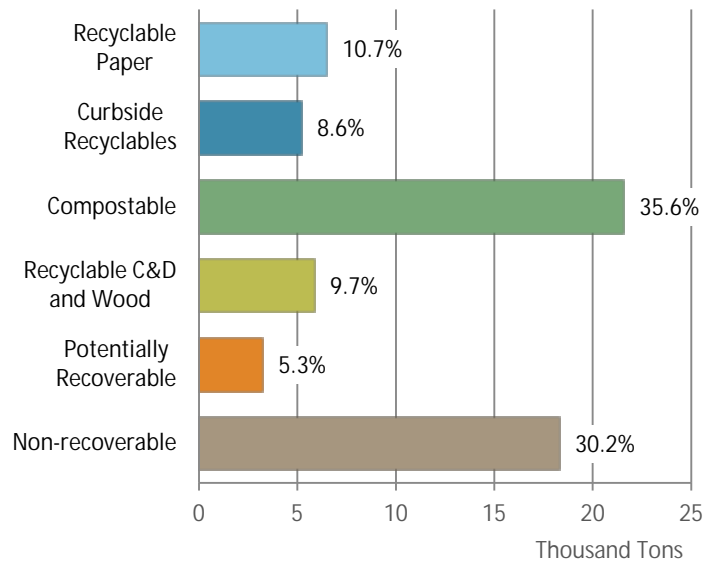
Table 3-14 demonstrates the the ten most prevalent *material types* in the overall commercial substream. *Food waste, vegetative* and *other food waste* accounted for almost a quarter (23.4%) of the commercial disposed waste by weight.

Table 3-14. Ten Most Prevalent *Materials Types* in Overall Commercial Disposed Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Food Waste, Vegetative	16.7%	16.7%	10,146
Other Food Waste	6.7%	23.4%	4,036
Compostable/Soiled Paper	6.0%	29.4%	3,637
Other Film	5.4%	34.8%	3,272
Remainder/Composite Paper	4.8%	39.6%	2,902
Low-grade Paper	4.3%	43.8%	2,595
Leaves and Grass	4.3%	48.1%	2,585
Uncoated OCC/Kraft Paper	3.7%	51.8%	2,265
Remainder/Composite Plastics	3.1%	55.0%	1,894
Dimensional Lumber	2.8%	57.8%	1,718
Total	**57.8%**		**35,051**

Table 3-15 presents detailed composition results for the overall commercial substream *by material type*.

Table 3-15. Detailed Disposed Waste Composition Results: Overall Commercial

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**23.5%**		**14,246**	**Wood Waste**	**8.9%**		**5,383**
Newspaper	1.3%	0.5%	784	Dimensional Lumber	2.8%	2.6%	1,718
Uncoated OCC/Kraft Paper	3.7%	0.9%	2,265	Pallets and Crates	2.2%	2.5%	1,322
High-grade Paper	1.4%	0.6%	840	Engineered Wood	1.4%	1.1%	852
Low-grade Paper	4.3%	1.1%	2,595	Other Untreated Wood	0.4%	0.1%	234
Waxed OCC	0.4%	0.4%	238	Painted Wood	1.6%	1.1%	951
Pizza Boxes	0.1%	0.1%	69	Treated Wood	0.3%	0.3%	177
Compostable/Soiled Paper	6.0%	1.2%	3,637	Remainder/Composite Wood	0.2%	0.2%	130
Pot. Comp. Single-use Food Service Paper	1.0%	0.4%	613				
Non-comp. Single-use Food Service Paper	0.5%	0.3%	301	**C&D Waste**	**5.1%**		**3,118**
Remainder/Composite Paper	4.8%	2.3%	2,902	Concrete	0.7%	0.6%	412
				Clean Drywall	0.0%	0.0%	0
Plastic	**16.2%**		**9,797**	Other Drywall	0.7%	0.4%	408
#1 PET Bottles	1.4%	1.0%	840	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.5%	0.2%	301	Asphalt Shingles	0.7%	1.0%	445
#1-#7 Other Containers	0.7%	0.2%	427	Other Asphalt Roofing	0.0%	0.0%	3
Expanded Polystyrene Food grade	0.4%	0.2%	234	Insulation	0.1%	0.2%	75
Expanded Polystyrene Non-food Grade	0.2%	0.2%	140	Carpet	0.1%	0.1%	33
Pot. Comp. Single-use Food Service Plastic	0.3%	0.3%	168	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.5%	0.2%	324	Soil, Rocks, and Sand	1.5%	1.3%	881
Clean Shopping/Dry Cleaning Bags	0.2%	0.1%	136	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	1.7%	1.1%	1,014	Remainder/Composite Construction	1.4%	1.8%	861
Other Film	5.4%	0.8%	3,272				
Durable Plastic Products	1.7%	0.8%	1,047	**E-Waste**	**0.2%**		**113**
Remainder/Composite Plastics	3.1%	2.1%	1,894	Televisions and CRTs	0.0%	0.0%	16
				Computers and Flat Monitors	0.1%	0.1%	60
Glass	**4.2%**		**2,538**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	1.3%	0.6%	814	Other Consumer Electronics	0.1%	0.1%	37
Green Glass Containers	0.4%	0.2%	253				
Brown Glass Containers	1.0%	0.6%	603	**Household Hazardous**	**1.8%**		**1,099**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	1.4%	1.4%	868	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**3.7%**		**2,229**	Paints, Solvents, and Adhesives	0.0%	0.0%	6
Aluminum Beverage Cans	0.4%	0.1%	230	Dry-cell Batteries	0.0%	0.0%	7
Aluminum Foil/Containers	0.1%	0.0%	59	Wet-cell Batteries	0.0%	0.0%	15
Other Non-ferrous	0.1%	0.1%	59	Gasoline/Kerosene	0.0%	0.0%	5
Tin Food Cans	0.3%	0.1%	207	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.2%	0.2%	114	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	1.7%	2.1%	1,035
Oil filters	0.0%	0.0%	18	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	1.9%	1.1%	1,144	House Cleaners and Chemicals	0.0%	0.1%	22
Remainder/Composite Metal	0.7%	0.3%	399	Other Potentially Hazardous	0.0%	0.0%	9
Organics	**35.4%**		**21,476**	**Other Waste**	**1.1%**		**647**
Food Waste, Vegetative	16.7%	3.1%	10,146	Furniture	0.3%	0.1%	166
Other Food Waste	6.7%	1.7%	4,036	Tires	0.0%	0.0%	0
Leaves and Grass	4.3%	2.2%	2,585	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.1%	0.1%	47	Non-distinct Fines	0.8%	0.7%	481
Branches and Stumps	0.1%	0.1%	33				
Textiles and Clothing	2.5%	0.8%	1,495				
Disposable Diapers	1.2%	0.6%	718				
Animal Excrement/Litter	1.4%	1.3%	869	**Totals**	**100.0%**		**60,647**
Remainder/Composite Organic	2.6%	1.7%	1,547	Sample Count			72

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Commercial Packer

Figure 3-11 shows commercial packer disposed waste composition by material class. The largest **material class**, **Organics**, made up approximately 44 percent of commercial packer disposed waste, followed by **Paper** (22.9%), and **Plastic** (13.4%). **Figure 3-12** summarizes the recoverability of materials in commercial packer waste. Almost three-quarters of the waste is recoverable or potentially recoverable materials (73.6%). Compostable materials accounted for most of the recoverable material (44.0%), and recyclable materials (Recyclable Paper, Curbside Recyclables, and Recyclable C&D and Wood) contributed almost one fifth of the waste (23.1%).

Figure 3-11. Overview of Commercial Packer Disposed Waste
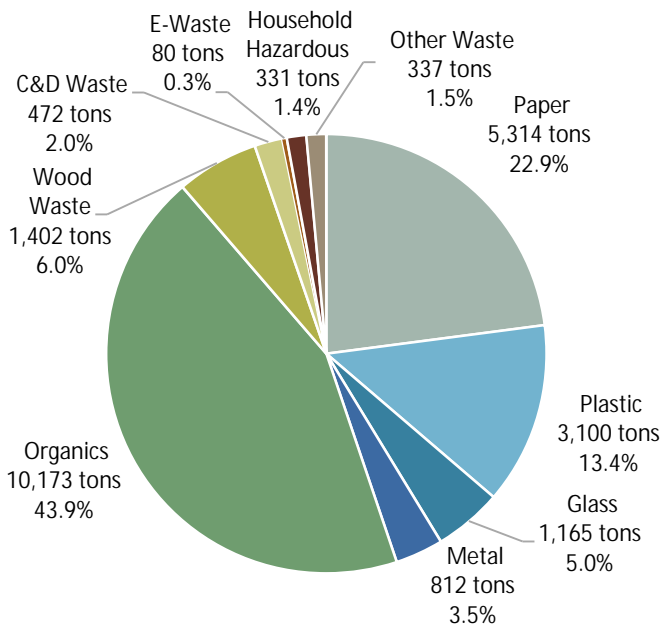
Figure 3-12. Summary of Recoverability of Commercial Packer Disposed Waste
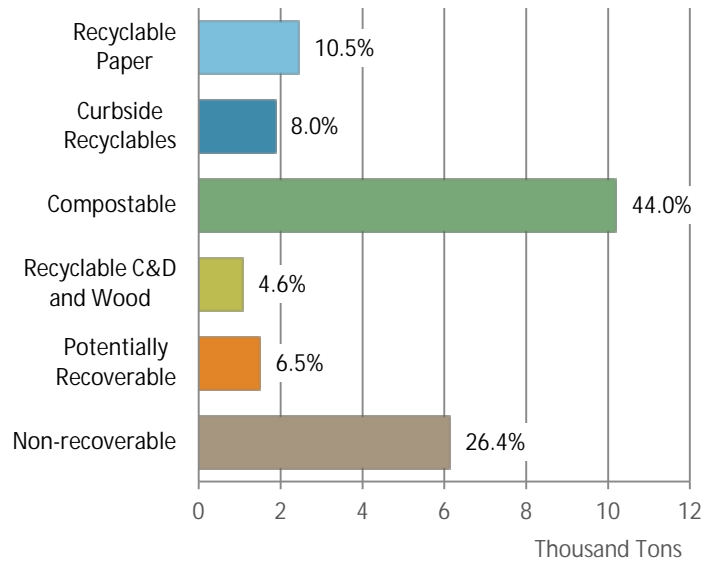
The three most prevalent *material types – food waste, vegetative; other food waste; and leaves and grass* – accounted for more than one third (35.2%) of commercial packer disposed waste by weight (**Table 3-16**).

Table 3-16. Ten Most Prevalent *Materials Types* in Commercial Packer Disposed Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Food Waste, Vegetative	20.3%	20.3%	4,698
Other Food Waste	8.2%	28.5%	1,911
Leaves and Grass	6.7%	35.2%	1,553
Compostable/Soiled Paper	6.4%	41.6%	1,488
Other Film	5.9%	47.5%	1,364
Low-grade Paper	4.4%	51.9%	1,027
Uncoated OCC/Kraft Paper	3.8%	55.8%	888
Remainder/Composite Paper	3.4%	59.2%	794
Textiles and Clothing	3.4%	62.6%	789
Remainder/Composite Glass	2.2%	64.8%	502
Total	64.8%		15,014

Table 3-17 presents detailed composition results for the commercial packer disposed waste stream by *material type*.

Table 3-17. Detailed Disposed Waste Composition Results: Commercial Packer

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**22.9%**		**5,314**	**Wood Waste**	**6.0%**		**1,402**
Newspaper	1.1%	0.5%	261	Dimensional Lumber	1.6%	1.9%	373
Uncoated OCC/Kraft Paper	3.8%	1.1%	888	Pallets and Crates	0.5%	0.8%	115
High-grade Paper	1.1%	0.6%	265	Engineered Wood	1.3%	1.2%	297
Low-grade Paper	4.4%	1.3%	1,027	Other Untreated Wood	0.0%	0.0%	6
Waxed OCC	0.7%	1.0%	151	Painted Wood	1.9%	2.3%	442
Pizza Boxes	0.2%	0.1%	42	Treated Wood	0.4%	0.4%	98
Compostable/Soiled Paper	6.4%	1.8%	1,488	Remainder/Composite Wood	0.3%	0.3%	71
Pot. Comp. Single-use Food Service Paper	1.0%	0.4%	232				
Non-comp. Single-use Food Service Paper	0.7%	0.6%	165	**C&D Waste**	**2.0%**		**472**
Remainder/Composite Paper	3.4%	2.4%	794	Concrete	0.6%	0.7%	142
				Clean Drywall	0.0%	0.0%	0
Plastic	**13.4%**		**3,100**	Other Drywall	0.7%	1.0%	164
#1 PET Bottles	0.7%	0.2%	174	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.6%	0.2%	140	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.8%	0.4%	185	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.3%	0.2%	68	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.2%	0.1%	50	Carpet	0.1%	0.2%	33
Pot. Comp. Single-use Food Service Plastic	0.2%	0.1%	41	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.6%	0.2%	132	Soil, Rocks, and Sand	0.6%	0.7%	132
Clean Shopping/Dry Cleaning Bags	0.3%	0.1%	58	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	1.5%	1.1%	355	Remainder/Composite Construction	0.0%	0.0%	0
Other Film	5.9%	1.3%	1,364				
Durable Plastic Products	0.9%	0.5%	214	**E-Waste**	**0.3%**		**80**
Remainder/Composite Plastics	1.4%	0.6%	321	Televisions and CRTs	0.1%	0.1%	16
				Computers and Flat Monitors	0.3%	0.3%	60
Glass	**5.0%**		**1,165**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	1.4%	0.7%	318	Other Consumer Electronics	0.0%	0.0%	4
Green Glass Containers	0.5%	0.3%	114				
Brown Glass Containers	1.0%	0.8%	231	**Household Hazardous**	**1.4%**		**331**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	2.2%	2.9%	502	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**3.5%**		**812**	Paints, Solvents, and Adhesives	0.0%	0.0%	6
Aluminum Beverage Cans	0.4%	0.1%	82	Dry-cell Batteries	0.0%	0.0%	2
Aluminum Foil/Containers	0.1%	0.1%	31	Wet-cell Batteries	0.1%	0.1%	15
Other Non-ferrous	0.0%	0.0%	4	Gasoline/Kerosene	0.0%	0.0%	5
Tin Food Cans	0.6%	0.3%	132	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.2%	0.1%	40	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	1.2%	1.3%	272
Oil filters	0.0%	0.1%	9	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	1.5%	1.0%	352	House Cleaners and Chemicals	0.1%	0.1%	22
Remainder/Composite Metal	0.7%	0.4%	162	Other Potentially Hazardous	0.0%	0.1%	9
Organics	**43.9%**		**10,173**	**Other Waste**	**1.5%**		**337**
Food Waste, Vegetative	20.3%	3.8%	4,698	Furniture	0.0%	0.0%	0
Other Food Waste	8.2%	2.4%	1,911	Tires	0.0%	0.0%	0
Leaves and Grass	6.7%	4.9%	1,553	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.2%	0.3%	44	Non-distinct Fines	1.5%	1.7%	337
Branches and Stumps	0.1%	0.2%	33				
Textiles and Clothing	3.4%	1.5%	789				
Disposable Diapers	2.0%	1.4%	461				
Animal Excrement/Litter	1.6%	0.9%	370	**Totals**	**100.0%**		**23,186**
Remainder/Composite Organic	1.4%	0.5%	314	Sample Count			31

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

## Commercial Roll-off (non-C&D)

Figure 3-13 demonstrated commercial roll-off composition by **material class**. Nearly three quarters of commercial roll-off (non-C&D) disposed waste was **Organics**, **Paper**, and **Plastic**. **Figure 3-14** shows that nearly one third of the waste was Compostable material (30.8%), and almost another third was Non-recoverable (32.5%). Recyclable Paper and Curbside Recyclables accounted for approximately another fifth (20.7%) of the commercial roll-off (MSW) waste.

Figure 3-13. Overview of Commercial Roll-Off Disposed Waste

E-Waste 33 tons 0.1%
Household Hazardous 768 tons 2.2%
Other Waste 142 tons 0.4%
C&D Waste 1,828 tons 5.2%
Wood Waste 3,390 tons 9.7%
Paper 8,759 tons 25.0%
Organics 10,763 tons 30.8%
Metal 1,372 tons 3.9%
Glass 1,360 tons 3.9%
Plastic 6,578 tons 18.8%
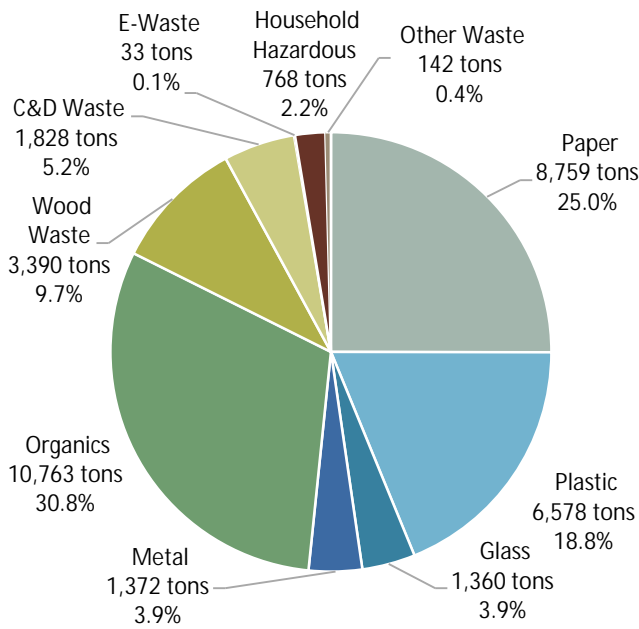
Figure 3-14. Summary of Recoverability of Commercial Roll-Off Disposed Waste

Recyclable Paper 11.4%
Curbside Recyclables 9.3%
Compostable 30.8%
Recyclable C&D and Wood 11.1%
Potentially Recoverable 4.9%
Non-recoverable 32.5%

Thousand Tons
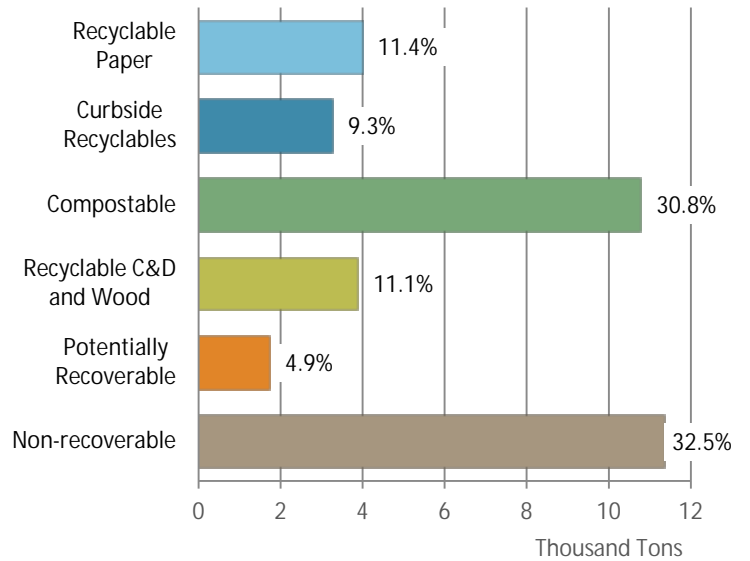
According to **Table 3-18**, the two most commonly observed *material types*, *food waste, vegetative* and *compostable/soiled paper* – both recoverable materials – accounted for approximately one fifth (21.2%) of commercial packer disposed waste by weight.

Table 3-18. Ten Most Prevalent *Materials Types* in Commercial Roll-Off Disposed Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Food Waste, Vegetative	15.3%	15.3%	5,338
Compostable/Soiled Paper	6.0%	21.2%	2,096
Remainder/Composite Paper	5.9%	27.2%	2,076
Other Food Waste	5.5%	32.7%	1,937
Other Film	5.3%	38.1%	1,869
Remainder/Composite Plastics	4.5%	42.5%	1,565
Low-grade Paper	4.4%	46.9%	1,535
Uncoated OCC/Kraft Paper	3.9%	50.8%	1,360
Remainder/Composite Organic	3.5%	54.3%	1,231
Pallets and Crates	3.5%	57.8%	1,207
Total	**57.8%**		**20,215**

Detailed composition results by *material type* for the commercial roll-off waste stream are shown in **Table 3-19**.

Table 3-19. Detailed Disposed Waste Composition Results: Commercial Roll-Off

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**25.0%**		**8,759**	**Wood Waste**	**9.7%**		**3,390**
Newspaper	1.5%	0.8%	523	Dimensional Lumber	3.4%	4.3%	1,195
Uncoated OCC/Kraft Paper	3.9%	1.4%	1,360	Pallets and Crates	3.5%	4.4%	1,207
High-grade Paper	1.6%	1.0%	568	Engineered Wood	1.6%	1.7%	555
Low-grade Paper	4.4%	1.7%	1,535	Other Untreated Wood	0.1%	0.1%	27
Waxed OCC	0.2%	0.4%	87	Painted Wood	0.8%	1.0%	270
Pizza Boxes	0.1%	0.1%	25	Treated Wood	0.2%	0.4%	79
Compostable/Soiled Paper	6.0%	1.8%	2,096	Remainder/Composite Wood	0.2%	0.3%	58
Pot. Comp. Single-use Food Service Paper	1.0%	0.6%	367				
Non-comp. Single-use Food Service Paper	0.4%	0.2%	124	**C&D Waste**	**5.2%**		**1,828**
Remainder/Composite Paper	5.9%	3.6%	2,076	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**18.8%**		**6,578**	Other Drywall	0.0%	0.0%	0
#1 PET Bottles	1.9%	1.6%	662	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.5%	0.3%	158	Asphalt Shingles	1.3%	1.8%	445
#1-#7 Other Containers	0.7%	0.2%	236	Other Asphalt Roofing	0.0%	0.0%	3
Expanded Polystyrene Food grade	0.5%	0.2%	166	Insulation	0.2%	0.4%	75
Expanded Polystyrene Non-food Grade	0.3%	0.3%	89	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.4%	0.5%	124	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.5%	0.3%	191	Soil, Rocks, and Sand	1.3%	1.8%	449
Clean Shopping/Dry Cleaning Bags	0.2%	0.1%	77	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	1.9%	1.8%	660	Remainder/Composite Construction	2.4%	3.1%	856
Other Film	5.3%	1.1%	1,869				
Durable Plastic Products	2.2%	1.4%	781	**E-Waste**	**0.1%**		**33**
Remainder/Composite Plastics	4.5%	3.7%	1,565	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**3.9%**		**1,360**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	1.4%	1.0%	491	Other Consumer Electronics	0.1%	0.2%	33
Green Glass Containers	0.4%	0.3%	136				
Brown Glass Containers	1.1%	0.9%	369	**Household Hazardous**	**2.2%**		**768**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	1.0%	1.6%	364	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**3.9%**		**1,372**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.4%	0.2%	147	Dry-cell Batteries	0.0%	0.0%	5
Aluminum Foil/Containers	0.1%	0.0%	27	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.1%	16	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.2%	0.1%	71	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.2%	0.3%	74	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	2.2%	3.5%	762
Oil filters	0.0%	0.0%	9	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	2.3%	1.8%	791	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	0.7%	0.5%	236	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**30.8%**		**10,763**	**Other Waste**	**0.4%**		**142**
Food Waste, Vegetative	15.3%	4.7%	5,338	Furniture	0.0%	0.0%	0
Other Food Waste	5.5%	2.4%	1,937	Tires	0.0%	0.0%	0
Leaves and Grass	2.3%	1.8%	805	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	2	Non-distinct Fines	0.4%	0.5%	142
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	2.0%	1.0%	701				
Disposable Diapers	0.7%	0.6%	253				
Animal Excrement/Litter	1.4%	2.1%	495	**Totals**	**100.0%**		**34,992**
Remainder/Composite Organic	3.5%	2.9%	1,231	Sample Count			28

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

School Waste[3]

Figure 3-15 shows school disposed waste composition by **material class** for school waste. More than half (57.1%) of school waste was composed of **C&D Waste** and **Wood Waste**. **Organics** made up an additional one fifth of this waste (21.9%). As shown in **Figure 3-16**, Recyclable C&D and Wood is the largest category of recoverable material in this waste stream (37.3%). Compostable materials were almost another quarter of the waste stream (24.2%). By contrast, Recyclable Paper and Curbside Recyclables, combined, made up about five percent of composition. Recoverable and potentially recoverable materials, in total, accounted for about two thirds (67.1%) of the waste.

Figure 3-15. Overview of School Disposed Waste
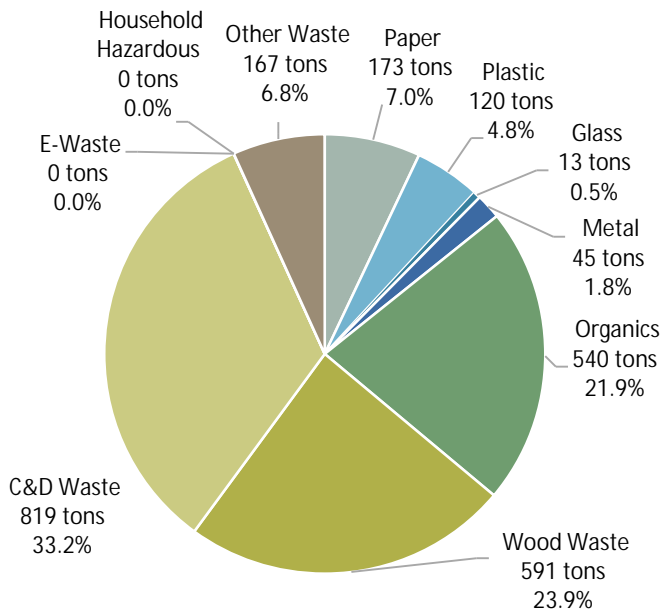
Figure 3-16. Summary of Recoverability of School Disposed Waste
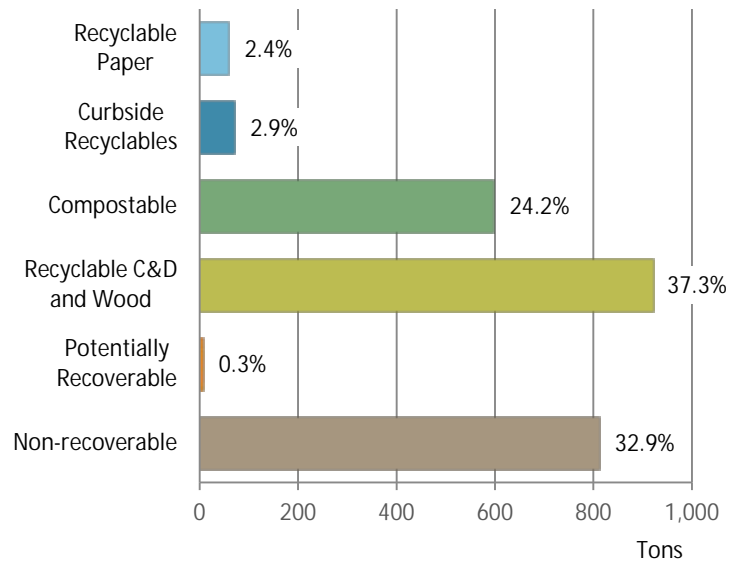
As presented in **Table 3-20**, the three most prevalent *material types – soil, rocks and sand, concrete,* and *other drywall –* accounted for one third (33.0%) of school waste by weight when summed.

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[3] Due to the sample size and prevalence of C&D and wood materials, this waste composition may not be representative of the typical waste stream for Tacoma Schools. Based on other waste characterization studies of school waste, it is unlikely that the quantities of C&D and wood waste would be present in this waste on an ongoing, continuing basis.

Table 3-20. Ten Most Prevalent *Materials Types* in School Disposed Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Soil, Rocks, and Sand	12.1%	12.1%	300
Concrete	11.0%	23.1%	270
Other Drywall	9.9%	33.0%	243
Painted Wood	9.7%	42.6%	239
Leaves and Grass	9.2%	51.9%	227
Other Untreated Wood	8.2%	60.0%	201
Other Food Waste	7.6%	67.6%	187
Furniture	6.7%	74.3%	166
Dimensional Lumber	6.1%	80.4%	150
Food Waste, Vegetative	4.5%	84.8%	110
Total	**84.8%**		**2,094**

Table 3-21 presents detailed composition results for school disposed waste by *material type*.

Table 3-21. Detailed Disposed Waste Composition Results: School Waste

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**7.0%**		**173**	**Wood Waste**	**23.9%**		**591**
Newspaper	0.0%	0.0%	0	Dimensional Lumber	6.1%	0.8%	150
Uncoated OCC/Kraft Paper	0.7%	0.5%	17	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	0.3%	0.3%	8	Engineered Wood	0.0%	0.0%	0
Low-grade Paper	1.4%	1.1%	34	Other Untreated Wood	8.2%	1.0%	201
Waxed OCC	0.0%	0.0%	0	Painted Wood	9.7%	1.3%	239
Pizza Boxes	0.1%	0.1%	3	Treated Wood	0.0%	0.0%	0
Compostable/Soiled Paper	2.2%	1.6%	53	Remainder/Composite Wood	0.0%	0.1%	1
Pot. Comp. Single-use Food Service Paper	0.6%	0.7%	14				
Non-comp. Single-use Food Service Paper	0.5%	0.7%	12	**C&D Waste**	**33.2%**		**819**
Remainder/Composite Paper	1.3%	1.1%	32	Concrete	11.0%	14.2%	270
				Clean Drywall	0.0%	0.0%	0
Plastic	**4.8%**		**120**	Other Drywall	9.9%	1.3%	243
#1 PET Bottles	0.2%	0.2%	5	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.1%	0.2%	3	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.3%	0.3%	7	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.0%	0.0%	0	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.0%	0.0%	1	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.1%	0.2%	3	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.0%	0.1%	1	Soil, Rocks, and Sand	12.1%	15.9%	300
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	1	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.0%	0.0%	0	Remainder/Composite Construction	0.2%	0.1%	5
Other Film	1.6%	1.2%	39				
Durable Plastic Products	2.1%	1.9%	52	**E-Waste**	**0.0%**		**0**
Remainder/Composite Plastics	0.3%	0.3%	7	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**0.5%**		**13**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.2%	0.2%	4	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.1%	0.1%	2				
Brown Glass Containers	0.2%	0.2%	4	**Household Hazardous**	**0.0%**		**0**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.1%	0.2%	2	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**1.8%**		**45**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	1	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	1	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	1.6%	2.1%	39	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.1%	0.1%	3	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	0.0%	0.0%	1	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	0.0%	0.0%	0	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**21.9%**		**540**	**Other Waste**	**6.8%**		**167**
Food Waste, Vegetative	4.5%	3.5%	110	Furniture	6.7%	3.6%	166
Other Food Waste	7.6%	5.8%	187	Tires	0.0%	0.0%	0
Leaves and Grass	9.2%	11.6%	227	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	0.0%	0.1%	1
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	0.2%	0.3%	5				
Disposable Diapers	0.2%	0.2%	4				
Animal Excrement/Litter	0.2%	0.5%	5	**Totals**	**100.0%**		**2,468**
Remainder/Composite Organic	0.1%	0.1%	2	Sample Count			13

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Self-Haul Waste

Overall Self-haul

As shown in **Figure 3-17**, **Organics, Wood Waste,** and **Other Waste** made up slightly more than 60 percent of overall self-haul waste. **Figure 3-18** summarizes the recoverability of the waste. Nearly two thirds (65.4%) of overall self-haul waste was composed of recoverable or potentially recoverable materials. Compostable material made up the largest recoverable fraction (21.2%) and was closely followed by Potentially Recoverable material (19.5%).

Figure 3-17. Overview of Overall Self-haul Disposed Waste
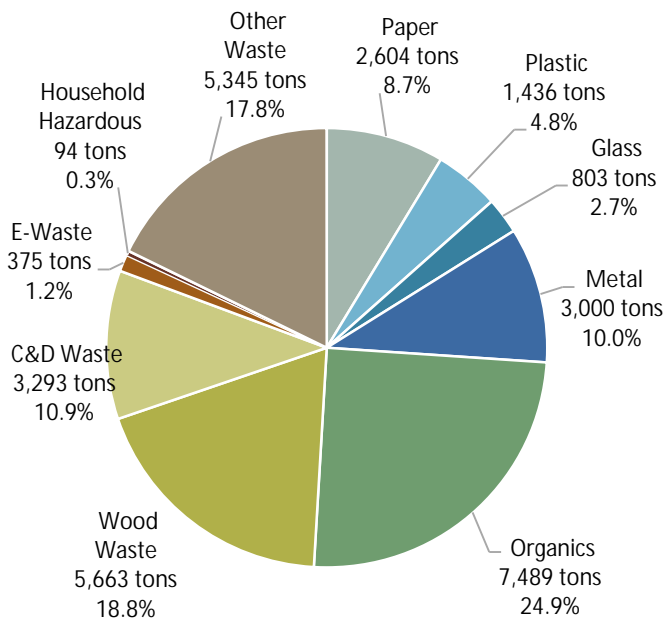
Figure 3-18. Summary of Recoverability of Overall Self-haul Disposed Waste
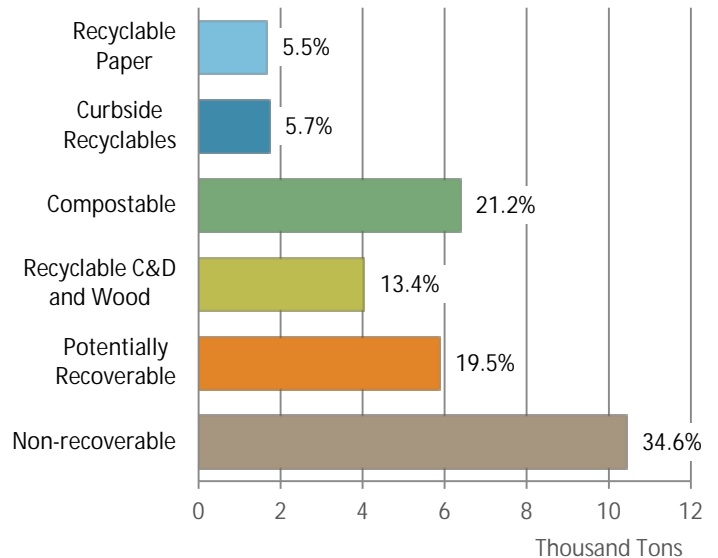
As presented in **Table 3-22**, the four most prevalent *material types – furniture, leaves and grass, prunings and trimmings*, and *dimensional lumber* – accounted for over one third (35.5%) of self-haul waste by weight.

Table 3-22. Ten Most Prevalent *Materials Types* in Overall Self-haul Disposed Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Furniture	10.9%	10.9%	3,281
Leaves and Grass	9.5%	20.4%	2,867
Prunings and Trimmings	8.0%	28.4%	2,415
Dimensional Lumber	7.1%	35.5%	2,134
Mattresses	6.6%	42.1%	1,987
Remainder/Composite Construction	4.2%	46.4%	1,274
Uncoated OCC/Kraft Paper	3.9%	50.2%	1,166
Other Ferrous	3.5%	53.7%	1,041
Textiles and Clothing	3.4%	57.1%	1,026
Remainder/Composite Metal	3.4%	60.5%	1,025
Total	**60.5%**		**18,215**

Table 3-23 presents detailed overall composition results for this substream by *material type*.

Table 3-23. Detailed Disposed Waste Composition Results: Overall Self-haul

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**8.7%**		**2,604**	**Wood Waste**	**18.8%**		**5,663**
Newspaper	0.6%	0.4%	179	Dimensional Lumber	7.1%	2.9%	2,134
Uncoated OCC/Kraft Paper	3.9%	2.8%	1,166	Pallets and Crates	0.6%	0.7%	176
High-grade Paper	0.2%	0.1%	53	Engineered Wood	3.1%	2.5%	928
Low-grade Paper	0.9%	0.4%	262	Other Untreated Wood	0.3%	0.3%	84
Waxed OCC	0.1%	0.2%	42	Painted Wood	3.4%	2.0%	1,020
Pizza Boxes	0.1%	0.0%	19	Treated Wood	1.7%	1.6%	511
Compostable/Soiled Paper	0.4%	0.2%	111	Remainder/Composite Wood	2.7%	1.9%	810
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	7				
Non-comp. Single-use Food Service Paper	0.1%	0.0%	18	**C&D Waste**	**10.9%**		**3,293**
Remainder/Composite Paper	2.5%	1.9%	748	Concrete	1.2%	1.1%	368
				Clean Drywall	0.3%	0.5%	89
Plastic	**4.8%**		**1,436**	Other Drywall	0.8%	0.8%	235
#1 PET Bottles	0.1%	0.1%	32	Asphalt Paving	0.0%	0.0%	2
#2 HDPE Bottles	0.0%	0.0%	14	Asphalt Shingles	0.1%	0.2%	40
#1-#7 Other Containers	0.1%	0.1%	26	Other Asphalt Roofing	0.0%	0.1%	13
Expanded Polystyrene Food grade	0.0%	0.0%	3	Insulation	0.1%	0.2%	38
Expanded Polystyrene Non-food Grade	0.0%	0.0%	6	Carpet	3.2%	2.5%	954
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	2	Carpet Padding	0.2%	0.3%	64
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	3	Soil, Rocks, and Sand	0.7%	0.8%	216
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	2	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.0%	0.0%	1	Remainder/Composite Construction	4.2%	4.4%	1,274
Other Film	0.6%	0.4%	186				
Durable Plastic Products	2.2%	1.5%	670	**E-Waste**	**1.2%**		**375**
Remainder/Composite Plastics	1.6%	1.1%	490	Televisions and CRTs	1.2%	1.9%	371
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**2.7%**		**803**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.1%	0.1%	34	Other Consumer Electronics	0.0%	0.0%	4
Green Glass Containers	0.0%	0.0%	6				
Brown Glass Containers	0.1%	0.1%	34	**Household Hazardous**	**0.3%**		**94**
Plate Glass	1.4%	1.3%	431	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	1.0%	0.8%	298	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**10.0%**		**3,000**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	10	Dry-cell Batteries	0.1%	0.2%	38
Aluminum Foil/Containers	0.0%	0.0%	2	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	1.4%	1.2%	412	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.1%	0.1%	30	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.1%	0.2%	44	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	1.4%	1.7%	436	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	8
Other Ferrous	3.5%	2.2%	1,041	House Cleaners and Chemicals	0.2%	0.2%	48
Remainder/Composite Metal	3.4%	2.4%	1,025	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**24.9%**		**7,489**	**Other Waste**	**17.8%**		**5,345**
Food Waste, Vegetative	2.2%	1.3%	665	Furniture	10.9%	5.8%	3,281
Other Food Waste	0.6%	0.4%	172	Tires	0.0%	0.0%	0
Leaves and Grass	9.5%	4.4%	2,867	Mattresses	6.6%	6.0%	1,987
Prunings and Trimmings	8.0%	4.2%	2,415	Non-distinct Fines	0.3%	0.3%	76
Branches and Stumps	0.3%	0.4%	76				
Textiles and Clothing	3.4%	2.5%	1,026				
Disposable Diapers	0.3%	0.3%	88				
Animal Excrement/Litter	0.4%	0.3%	108	**Totals**	**100.0%**		**30,103**
Remainder/Composite Organic	0.2%	0.1%	72	Sample Count			131

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Residential Self-haul (non-C&D)

Figure 3-19 illustrates the breakdown of **material classes** in residential self-haul disposed waste. Approximately one quarter (25.5%) of residential self-haul disposed waste was **Organics** and an additional third (33.8%) of the waste was **C&D Waste** and **Wood Waste**. As shown in **Figure 3-20**, approximately two fifths (40.5%) of residential self-haul waste was Non-recoverable. Compostable material was the second largest recoverability category present, accounting for almost a quarter (23.9%) of the waste.

Figure 3-19. Overview of Residential Self-haul Disposed Waste
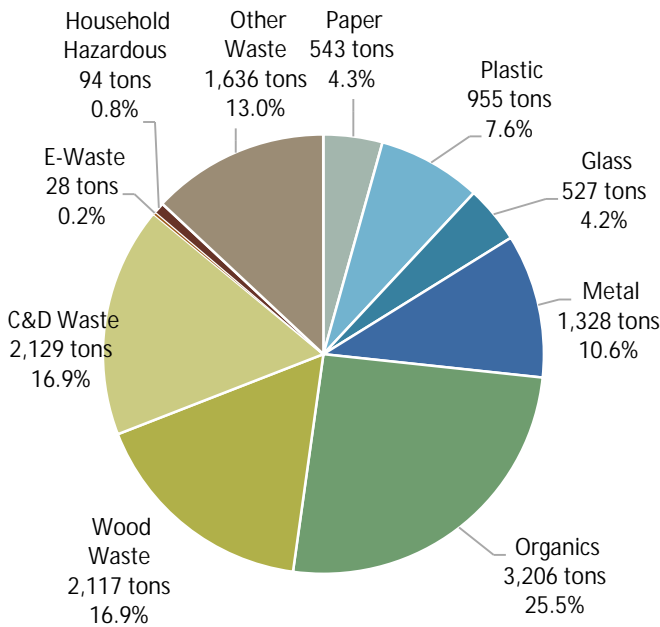
Figure 3-20. Summary of Recoverability of Residential Self-haul Disposed Waste
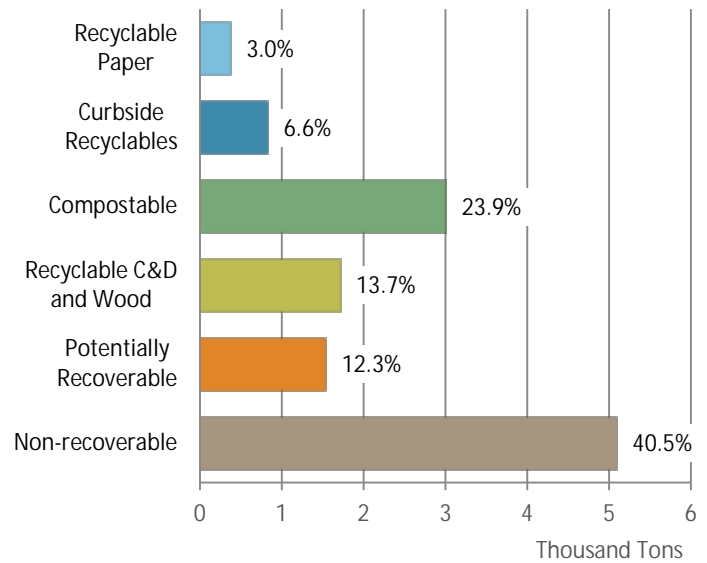
As shown in **Table 3-24**, the two most commonly observed *material types – leaves and grass* and *furniture –* each represented slightly over one tenth (10.7% *leaves and grass* and 10.3% *furniture*) of the residential self-haul disposed waste by weight.

Table 3-24. Ten Most Prevalent *Materials Types* in Residential Self-haul Disposed Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Leaves and Grass	10.7%	10.7%	1,345
Furniture	10.3%	21.0%	1,295
Prunings and Trimmings	8.8%	29.8%	1,106
Dimensional Lumber	8.2%	38.1%	1,035
Remainder/Composite Construction	7.7%	45.8%	973
Other Ferrous	5.4%	51.2%	676
Durable Plastic Products	4.4%	55.6%	550
Major Appliances	3.5%	59.0%	436
Plate Glass	3.2%	62.3%	406
Treated Wood	3.2%	65.5%	402
Total	65.5%		8,224

Detailed overall composition results by *material type* for this substream are shown in **Table 3-25**.

Table 3-25. Detailed Disposed Waste Composition Results: Residential Self-haul

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**4.3%**		**543**	**Wood Waste**	**16.9%**		**2,117**
Newspaper	0.7%	0.8%	93	Dimensional Lumber	8.2%	5.5%	1,035
Uncoated OCC/Kraft Paper	0.9%	0.6%	118	Pallets and Crates	0.8%	1.2%	101
High-grade Paper	0.2%	0.1%	24	Engineered Wood	0.7%	0.6%	84
Low-grade Paper	1.1%	0.7%	141	Other Untreated Wood	0.1%	0.1%	7
Waxed OCC	0.0%	0.0%	0	Painted Wood	3.0%	3.2%	379
Pizza Boxes	0.0%	0.0%	5	Treated Wood	3.2%	3.7%	402
Compostable/Soiled Paper	0.2%	0.1%	29	Remainder/Composite Wood	0.9%	0.7%	111
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	5				
Non-comp. Single-use Food Service Paper	0.0%	0.0%	3	**C&D Waste**	**16.9%**		**2,129**
Remainder/Composite Paper	1.0%	0.6%	125	Concrete	2.6%	2.6%	321
				Clean Drywall	0.7%	1.2%	89
Plastic	**7.6%**		**955**	Other Drywall	1.4%	1.7%	175
#1 PET Bottles	0.1%	0.1%	18	Asphalt Paving	0.0%	0.0%	2
#2 HDPE Bottles	0.0%	0.0%	6	Asphalt Shingles	0.3%	0.4%	40
#1-#7 Other Containers	0.1%	0.1%	14	Other Asphalt Roofing	0.1%	0.2%	13
Expanded Polystyrene Food grade	0.0%	0.0%	1	Insulation	0.3%	0.5%	37
Expanded Polystyrene Non-food Grade	0.0%	0.0%	1	Carpet	3.1%	3.0%	395
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	1	Carpet Padding	0.4%	0.6%	47
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	1	Soil, Rocks, and Sand	0.3%	0.3%	38
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	0	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.0%	0.0%	0	Remainder/Composite Construction	7.7%	10.4%	973
Other Film	0.9%	0.8%	112				
Durable Plastic Products	4.4%	3.5%	550	**E-Waste**	**0.2%**		**28**
Remainder/Composite Plastics	2.0%	2.1%	251	Televisions and CRTs	0.2%	0.3%	24
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**4.2%**		**527**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.2%	0.2%	20	Other Consumer Electronics	0.0%	0.0%	4
Green Glass Containers	0.0%	0.0%	0				
Brown Glass Containers	0.2%	0.2%	21	**Household Hazardous**	**0.8%**		**94**
Plate Glass	3.2%	3.1%	406	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.6%	0.9%	80	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**10.6%**		**1,328**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	5	Dry-cell Batteries	0.3%	0.4%	38
Aluminum Foil/Containers	0.0%	0.0%	1	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.2%	0.2%	26	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.1%	0.1%	6	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	1	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	3.5%	4.1%	436	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.1%	0.1%	8
Other Ferrous	5.4%	4.8%	676	House Cleaners and Chemicals	0.4%	0.6%	48
Remainder/Composite Metal	1.4%	1.3%	176	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**25.5%**		**3,206**	**Other Waste**	**13.0%**		**1,636**
Food Waste, Vegetative	2.8%	2.2%	354	Furniture	10.3%	5.7%	1,295
Other Food Waste	0.7%	0.7%	92	Tires	0.0%	0.0%	0
Leaves and Grass	10.7%	5.9%	1,345	Mattresses	2.2%	1.7%	277
Prunings and Trimmings	8.8%	5.9%	1,106	Non-distinct Fines	0.5%	0.7%	64
Branches and Stumps	0.6%	0.9%	70				
Textiles and Clothing	1.4%	1.0%	179				
Disposable Diapers	0.2%	0.2%	19				
Animal Excrement/Litter	0.3%	0.4%	34	**Totals**	**100.0%**		**12,564**
Remainder/Composite Organic	0.1%	0.1%	7	Sample Count			80

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

## Commercial Self-haul (non-C&D)

Figure 3-21 illustrates the breakdown of **material classes** in commercial self-haul disposed waste. The three largest material classes observed in commercial self-haul disposed waste were **Organics**, **Other Waste**, and **Wood Waste**, which together accounted for nearly two thirds (65.7%) of commercial self-haul waste. As shown in **Figure 3-22**, approximately 70 percent of commercial self-haul waste was recoverable or potentially recoverable. Compostable material was the second largest recoverability category present, accounting for 19 percent of the waste. More than a quarter of the waste was recyclable (Recyclable Paper, Curbside Recyclables, and Recyclable C&D and Wood combined were 25.6% of the waste by weight).

Figure 3-21. Overview of Commercial Self-haul Disposed Waste

Other Waste 3,709 tons 21.1%
Paper 2,061 tons 11.8%
Plastic 480 tons 2.7%
Household Hazardous 0 tons 0.0%
Glass 276 tons 1.6%
Metal 1,673 tons 9.5%
E-Waste 347 tons 2.0%
C&D Waste 1,164 tons 6.6%
Wood Waste 3,546 tons 20.2%
Organics 4,283 tons 24.4%
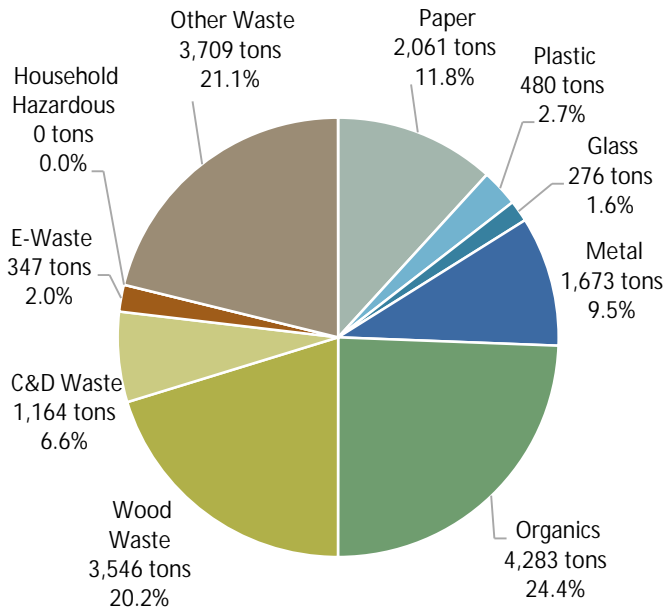
Figure 3-22. Summary of Recoverability of Commercial Self-haul Disposed Waste

Recyclable Paper 7.3%
Curbside Recyclables 5.1%
Compostable 19.2%
Recyclable C&D and Wood 13.2%
Potentially Recoverable 24.7%
Non-recoverable 30.4%

Thousand Tons
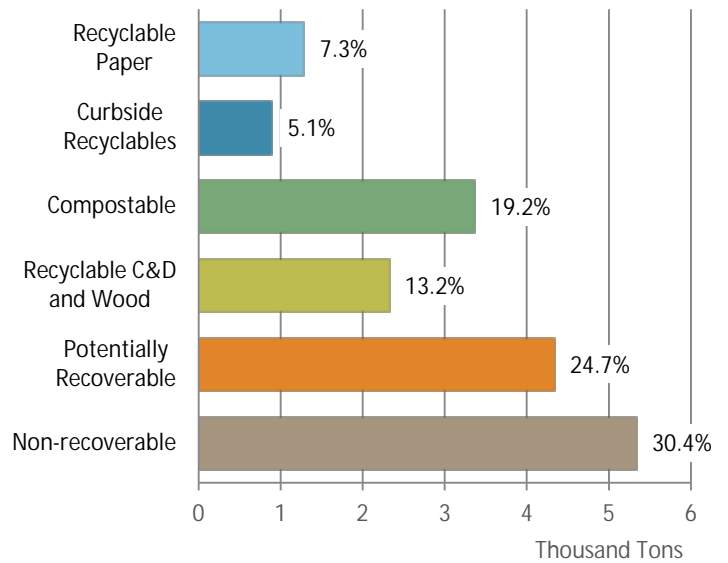
As presented in **Table 3-26**, the two most commonly observed *material types – furniture* and *mattresses* – together accounted for over one fifth (21.1%) of the commercial self-haul disposed waste substream.

Table 3-26. Ten Most Prevalent *Materials Types* in Commercial Self-haul Disposed Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Furniture	11.3%	11.3%	1,986
Mattresses	9.7%	21.1%	1,710
Leaves and Grass	8.7%	29.8%	1,522
Prunings and Trimmings	7.5%	37.2%	1,308
Dimensional Lumber	6.3%	43.5%	1,099
Uncoated OCC/Kraft Paper	6.0%	49.5%	1,049
Remainder/Composite Metal	4.8%	54.3%	848
Textiles and Clothing	4.8%	59.1%	847
Engineered Wood	4.8%	63.9%	844
Remainder/Composite Wood	4.0%	67.9%	700
Total	**67.9%**		**11,913**

Table 3-27 presents detailed overall composition results for this substream by *material type*.

Table 3-27. Detailed Disposed Waste Composition Results: Commercial Self-haul

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**11.8%**		**2,061**	**Wood Waste**	**20.2%**		**3,546**
Newspaper	0.5%	0.3%	86	Dimensional Lumber	6.3%	3.1%	1,099
Uncoated OCC/Kraft Paper	6.0%	4.7%	1,049	Pallets and Crates	0.4%	0.7%	76
High-grade Paper	0.2%	0.1%	28	Engineered Wood	4.8%	4.3%	844
Low-grade Paper	0.7%	0.5%	122	Other Untreated Wood	0.4%	0.5%	78
Waxed OCC	0.2%	0.3%	42	Painted Wood	3.7%	2.6%	641
Pizza Boxes	0.1%	0.1%	13	Treated Wood	0.6%	0.7%	109
Compostable/Soiled Paper	0.5%	0.3%	82	Remainder/Composite Wood	4.0%	3.2%	700
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	3				
Non-comp. Single-use Food Service Paper	0.1%	0.1%	14	**C&D Waste**	**6.6%**		**1,164**
Remainder/Composite Paper	3.5%	3.2%	622	Concrete	0.3%	0.5%	47
				Clean Drywall	0.0%	0.0%	0
Plastic	**2.7%**		**480**	Other Drywall	0.3%	0.6%	60
#1 PET Bottles	0.1%	0.1%	14	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.1%	0.0%	9	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.1%	0.1%	12	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.0%	0.0%	2	Insulation	0.0%	0.0%	2
Expanded Polystyrene Non-food Grade	0.0%	0.0%	5	Carpet	3.2%	3.8%	559
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	1	Carpet Padding	0.1%	0.2%	17
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	1	Soil, Rocks, and Sand	1.0%	1.4%	178
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	2	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.0%	0.0%	1	Remainder/Composite Construction	1.7%	1.6%	301
Other Film	0.4%	0.3%	75				
Durable Plastic Products	0.7%	0.4%	120	**E-Waste**	**2.0%**		**347**
Remainder/Composite Plastics	1.4%	1.2%	238	Televisions and CRTs	2.0%	3.3%	347
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**1.6%**		**276**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.1%	0.1%	14	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.0%	0.0%	6				
Brown Glass Containers	0.1%	0.1%	14	**Household Hazardous**	**0.0%**		**0**
Plate Glass	0.1%	0.2%	24	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	1.2%	1.3%	218	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**9.5%**		**1,673**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	5	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	1	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	2.2%	2.1%	386	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.1%	0.1%	24	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.2%	0.3%	43	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	2.1%	1.5%	365	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	4.8%	4.0%	848	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**24.4%**		**4,283**	**Other Waste**	**21.1%**		**3,709**
Food Waste, Vegetative	1.8%	1.6%	311	Furniture	11.3%	9.1%	1,986
Other Food Waste	0.5%	0.4%	80	Tires	0.0%	0.0%	0
Leaves and Grass	8.7%	6.3%	1,522	Mattresses	9.7%	10.3%	1,710
Prunings and Trimmings	7.5%	5.8%	1,308	Non-distinct Fines	0.1%	0.1%	13
Branches and Stumps	0.0%	0.1%	6				
Textiles and Clothing	4.8%	4.2%	847				
Disposable Diapers	0.4%	0.4%	69				
Animal Excrement/Litter	0.4%	0.4%	73	**Totals**	**100.0%**		**17,540**
Remainder/Composite Organic	0.4%	0.2%	65	Sample Count			51

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Construction and Demolition (C&D) Waste

Overall C&D

Figure 3-23 shows a breakdown of overall C&D waste by **material class**. More than 80 percent of overall C&D disposed waste was **Wood Waste** (42.6%) and **C&D Waste** (40.6%). **Figure 3-24** summarizes the recoverability of materials in the waste stream and demonstrates that most of C&D disposed waste was Recyclable C&D and Wood (42.1%) or Non-recoverable (42.2%).

Figure 3-23. Overview of Overall C&D Disposed Waste
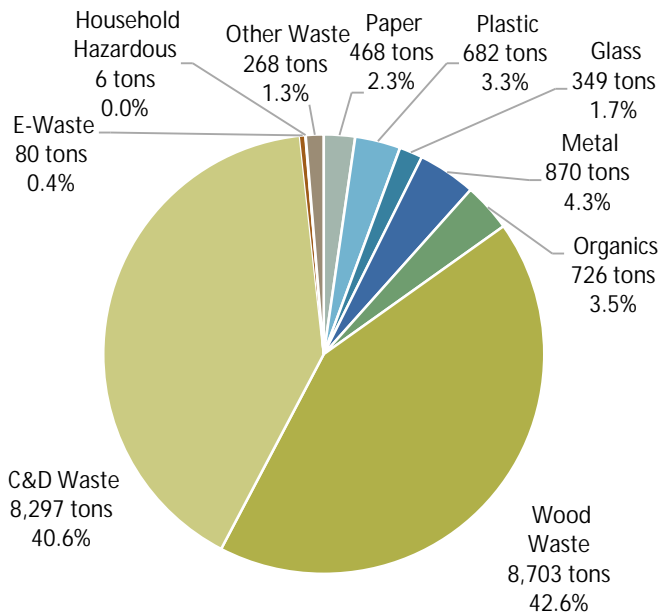
Figure 3-24. Summary of Recoverability of Overall C&D Disposed Waste
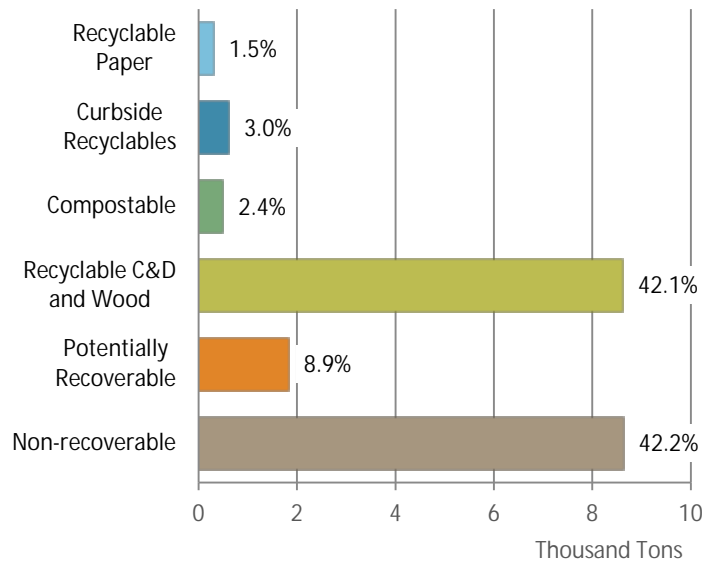
Table 3-28 shows that the three most commonly observed *material types – dimensional lumber, remainder/composite construction,* and *painted wood –* accounted for more than a third (36.1%) of overall C&D disposed waste by weight.

Table 3-28. Ten Most Prevalent *Materials Types* in Overall C&D Disposed Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Dimensional Lumber	15.1%	15.1%	3,083
Remainder/Composite Construction	12.9%	27.9%	2,632
Painted Wood	8.1%	36.1%	1,665
Pallets and Crates	7.6%	43.7%	1,550
Other Drywall	5.9%	49.5%	1,200
Engineered Wood	5.2%	54.8%	1,069
Other Asphalt Roofing	4.1%	58.8%	829
Soil, Rocks, and Sand	4.0%	62.9%	827
Treated Wood	3.8%	66.7%	775
Carpet	3.8%	70.4%	767
Total	**70.4%**		**14,397**

Table 3-29 presents detailed overall composition results for this substream by *material type*.

Table 3-29. Detailed Disposed Waste Composition Results: Overall C&D

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**2.3%**		**468**	**Wood Waste**	**42.6%**		**8,703**
Newspaper	0.0%	0.0%	1	Dimensional Lumber	15.1%	5.0%	3,083
Uncoated OCC/Kraft Paper	1.3%	0.6%	263	Pallets and Crates	7.6%	4.3%	1,550
High-grade Paper	0.0%	0.0%	7	Engineered Wood	5.2%	5.4%	1,069
Low-grade Paper	0.2%	0.2%	31	Other Untreated Wood	1.6%	2.1%	324
Waxed OCC	0.0%	0.0%	0	Painted Wood	8.1%	3.2%	1,665
Pizza Boxes	0.0%	0.0%	0	Treated Wood	3.8%	1.7%	775
Compostable/Soiled Paper	0.1%	0.2%	29	Remainder/Composite Wood	1.2%	0.5%	237
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	1				
Non-comp. Single-use Food Service Paper	0.0%	0.0%	0	**C&D Waste**	**40.6%**		**8,297**
Remainder/Composite Paper	0.7%	0.3%	135	Concrete	2.7%	1.6%	561
				Clean Drywall	1.3%	1.2%	273
Plastic	**3.3%**		**682**	Other Drywall	5.9%	2.1%	1,200
#1 PET Bottles	0.0%	0.0%	3	Asphalt Paving	0.1%	0.1%	18
#2 HDPE Bottles	0.0%	0.0%	1	Asphalt Shingles	1.5%	1.3%	304
#1-#7 Other Containers	0.1%	0.1%	17	Other Asphalt Roofing	4.1%	3.1%	829
Expanded Polystyrene Food grade	0.0%	0.0%	3	Insulation	0.5%	0.7%	100
Expanded Polystyrene Non-food Grade	0.3%	0.4%	57	Carpet	3.8%	1.9%	767
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	0.9%	0.6%	185
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	0	Soil, Rocks, and Sand	4.0%	3.3%	827
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	2	Ceramics and Brick	2.9%	2.1%	602
Other Clean PE Film	0.1%	0.1%	16	Remainder/Composite Construction	12.9%	7.5%	2,632
Other Film	0.7%	0.6%	152				
Durable Plastic Products	1.0%	1.2%	204	**E-Waste**	**0.4%**		**80**
Remainder/Composite Plastics	1.1%	0.9%	228	Televisions and CRTs	0.4%	0.4%	73
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**1.7%**		**349**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.0%	0.0%	2	Other Consumer Electronics	0.0%	0.1%	7
Green Glass Containers	0.0%	0.0%	0				
Brown Glass Containers	0.0%	0.0%	3	**Household Hazardous**	**0.0%**		**6**
Plate Glass	0.2%	0.4%	43	Pesticides and Herbicides	0.0%	0.0%	4
Remainder/Composite Glass	1.5%	0.8%	301	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**4.3%**		**870**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	2	Dry-cell Batteries	0.0%	0.0%	1
Aluminum Foil/Containers	0.0%	0.0%	0	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.5%	0.4%	105	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.1%	0.1%	15	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	2	Medical Wastes	0.0%	0.0%	0
Oil filters	0.1%	0.1%	13	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	2.2%	2.0%	453	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	1.4%	0.6%	278	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**3.5%**		**726**	**Other Waste**	**1.3%**		**268**
Food Waste, Vegetative	0.0%	0.1%	7	Furniture	0.4%	0.3%	78
Other Food Waste	0.0%	0.1%	9	Tires	0.0%	0.0%	5
Leaves and Grass	1.7%	1.9%	343	Mattresses	0.8%	1.2%	169
Prunings and Trimmings	0.4%	0.4%	90	Non-distinct Fines	0.1%	0.1%	15
Branches and Stumps	0.1%	0.1%	11				
Textiles and Clothing	1.2%	1.7%	242				
Disposable Diapers	0.0%	0.0%	0				
Animal Excrement/Litter	0.0%	0.0%	3	**Totals**	**100.0%**		**20,449**
Remainder/Composite Organic	0.1%	0.1%	20	Sample Count			124

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Commercial Roll-off C&D

As shown in **Figure 3-25**, more than 70 percent of the commercial roll-off C&D substream was **Wood Waste** (41.2%) and **C&D Waste** (30.4%). **Figure 3-26** shows what portion of the waste stream was recyclable, compostable, or non-recoverable. The two largest recoverability categories were Recyclable C&D and Wood (37.9%) and Non-Recoverable (36.4%); and the two smallest were Recyclable Paper (2.5%) and Compostable Material (2.2%).

Figure 3-25. Overview of Commercial Roll-off (C&D) Disposed Waste
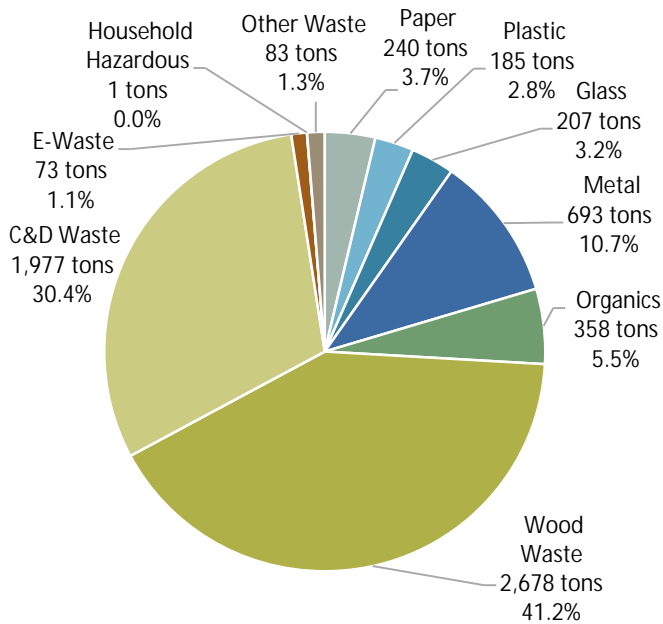
Figure 3-26. Summary of Recoverability of Commercial Roll-off (C&D) Disposed Waste
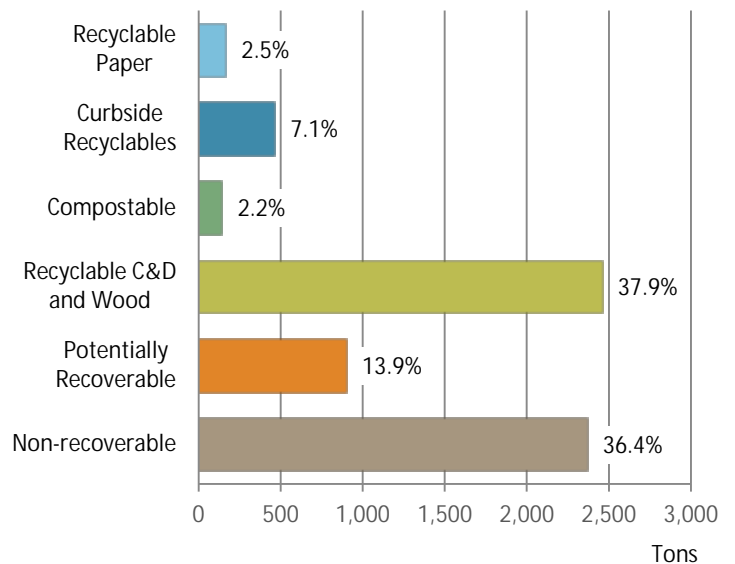
As presented in **Table 3-30**, the three most prevalent material types in this substream – *dimensional lumber, painted wood,* and *pallets and crates* – accounted for nearly one third (32.9%) of commercial roll-off C&D disposed waste by weight.

Table 3-30. Ten Most Prevalent *Materials Types* in Commercial Roll-off (C&D) Disposed Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Dimensional Lumber	13.2%	13.2%	857
Painted Wood	11.2%	24.4%	730
Pallets and Crates	8.5%	32.9%	551
Remainder/Composite Construction	6.0%	39.0%	393
Other Ferrous	5.2%	44.1%	336
Soil, Rocks, and Sand	4.9%	49.0%	317
Other Drywall	3.8%	52.8%	248
Carpet	3.7%	56.5%	242
Concrete	3.5%	60.0%	227
Treated Wood	3.5%	63.5%	227
Total	**63.5%**		**4,126**

Table 3-31 presents detailed overall composition results for commercial roll-off C&D disposed waste *by material class.*

Table 3-31. Detailed Disposed Waste Composition Results: Commercial Roll-off (C&D)

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**3.7%**		**240**	**Wood Waste**	**41.2%**		**2,678**
Newspaper	0.0%	0.0%	1	Dimensional Lumber	13.2%	7.6%	857
Uncoated OCC/Kraft Paper	2.1%	1.2%	133	Pallets and Crates	8.5%	8.6%	551
High-grade Paper	0.1%	0.1%	5	Engineered Wood	2.7%	1.5%	175
Low-grade Paper	0.4%	0.5%	26	Other Untreated Wood	0.1%	0.1%	8
Waxed OCC	0.0%	0.0%	0	Painted Wood	11.2%	6.7%	730
Pizza Boxes	0.0%	0.0%	0	Treated Wood	3.5%	2.9%	227
Compostable/Soiled Paper	0.4%	0.7%	27	Remainder/Composite Wood	2.0%	1.2%	130
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	0				
Non-comp. Single-use Food Service Paper	0.0%	0.0%	0	**C&D Waste**	**30.4%**		**1,977**
Remainder/Composite Paper	0.7%	0.6%	47	Concrete	3.5%	2.4%	227
				Clean Drywall	0.6%	0.7%	39
Plastic	**2.8%**		**185**	Other Drywall	3.8%	1.7%	248
#1 PET Bottles	0.0%	0.0%	2	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.0%	0.0%	1	Asphalt Shingles	2.3%	2.4%	151
#1-#7 Other Containers	0.0%	0.0%	2	Other Asphalt Roofing	1.9%	2.2%	125
Expanded Polystyrene Food grade	0.0%	0.0%	0	Insulation	0.3%	0.4%	20
Expanded Polystyrene Non-food Grade	0.1%	0.1%	3	Carpet	3.7%	3.0%	242
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	1.3%	1.4%	82
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	0	Soil, Rocks, and Sand	4.9%	5.2%	317
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	0	Ceramics and Brick	2.1%	1.6%	134
Other Clean PE Film	0.2%	0.2%	12	Remainder/Composite Construction	6.0%	3.0%	393
Other Film	0.8%	0.6%	49				
Durable Plastic Products	0.8%	0.7%	49	**E-Waste**	**1.1%**		**73**
Remainder/Composite Plastics	1.0%	1.0%	65	Televisions and CRTs	1.1%	1.2%	73
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**3.2%**		**207**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.0%	0.0%	2	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.0%	0.0%	0				
Brown Glass Containers	0.0%	0.0%	0	**Household Hazardous**	**0.0%**		**1**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	3.2%	2.1%	205	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**10.7%**		**693**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	1	Dry-cell Batteries	0.0%	0.0%	1
Aluminum Foil/Containers	0.0%	0.0%	0	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	1.6%	1.1%	102	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.2%	0.4%	14	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.1%	2	Medical Wastes	0.0%	0.0%	0
Oil filters	0.2%	0.3%	13	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	5.2%	6.1%	336	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	3.5%	1.8%	224	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**5.5%**		**358**	**Other Waste**	**1.3%**		**83**
Food Waste, Vegetative	0.1%	0.2%	7	Furniture	0.8%	0.7%	51
Other Food Waste	0.1%	0.1%	6	Tires	0.1%	0.1%	5
Leaves and Grass	0.9%	0.7%	58	Mattresses	0.3%	0.3%	19
Prunings and Trimmings	0.7%	0.9%	43	Non-distinct Fines	0.1%	0.1%	8
Branches and Stumps	0.0%	0.0%	1				
Textiles and Clothing	3.5%	5.4%	224				
Disposable Diapers	0.0%	0.0%	0				
Animal Excrement/Litter	0.0%	0.1%	3	**Totals**	**100.0%**		**6,494**
Remainder/Composite Organic	0.3%	0.3%	17	Sample Count			38

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Residential Self-haul C&D

As shown in **Figure 3-27**, approximately half of residential self-haul C&D disposed waste was **C&D Waste**. **Wood Waste** was the next largest **material class** observed, making up almost 44 percent of residential self-haul C&D waste, and the remaining **material classes** each accounted for 2 percent or less. **Figure 3-28** presents the composition results according to the recoverability of the sorted materials. Approximately half of the residential self-haul C&D waste was Non-recoverable. The remaining waste was primarily Recyclable C&D and Wood (36.9%), and only 2 percent of the waste was Recyclable Paper or Curbside Recyclable or Compostable material.

Figure 3-27. Overview of Residential Self-haul (C&D) Disposed Waste
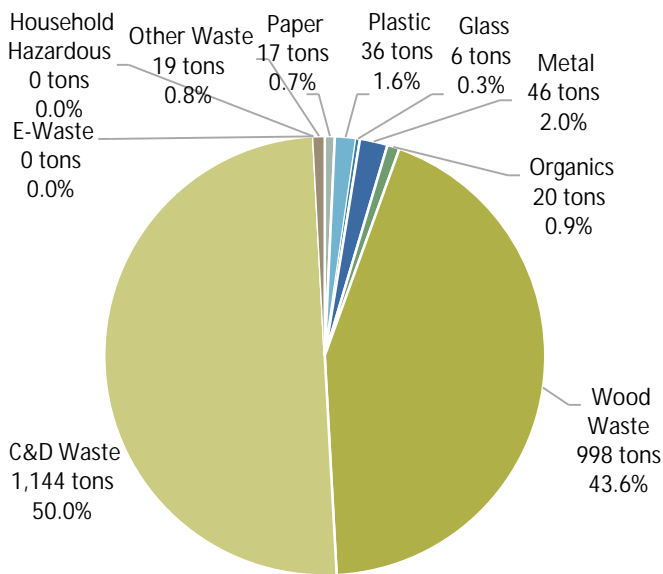
Figure 3-28. Summary of Recoverability of Residential Self-haul (C&D) Disposed Waste
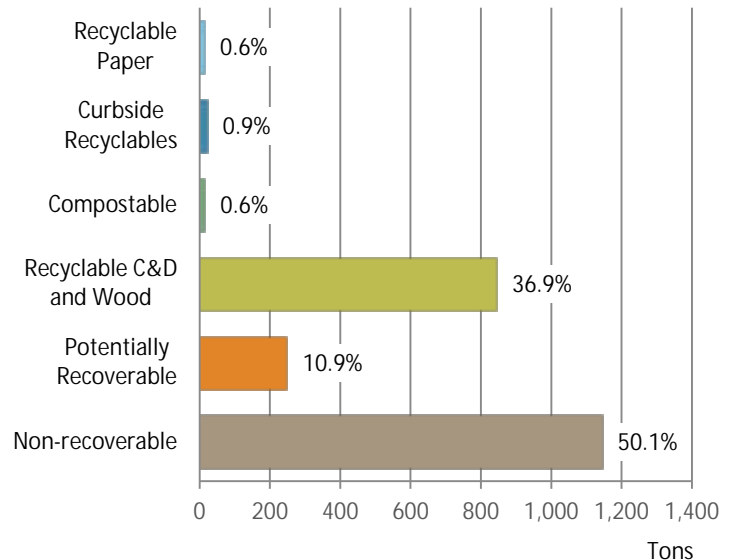
Table 3-32 demonstrates that the two most prevalent *material types– remainder/composite construction* and *dimensional lumber* – accounted for over half (52.0%) of residential self-haul C&D disposed waste by weight.

Table 3-32. Ten Most Prevalent *Materials Types* in Residential Self-haul (C&D) Disposed Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Remainder/Composite Construction	29.4%	29.4%	672
Dimensional Lumber	22.7%	52.0%	518
Treated Wood	9.8%	61.9%	225
Carpet	8.3%	70.2%	190
Ceramics and Brick	6.0%	76.2%	138
Painted Wood	5.9%	82.0%	134
Clean Drywall	3.7%	85.7%	85
Engineered Wood	2.7%	88.4%	61
Other Drywall	1.5%	89.9%	35
Other Untreated Wood	1.5%	91.4%	34
Total	**91.4%**		**2,091**

Table 3-33 presents detailed overall composition results for residential self-haul C&D disposed waste by *material type.*

Table 3-33. Detailed Disposed Waste Composition Results: Residential Self-haul (C&D)

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**0.7%**		**17**	**Wood Waste**	**43.6%**		**998**
Newspaper	0.0%	0.0%	0	Dimensional Lumber	22.7%	15.5%	518
Uncoated OCC/Kraft Paper	0.5%	0.2%	12	Pallets and Crates	0.4%	0.7%	9
High-grade Paper	0.0%	0.0%	0	Engineered Wood	2.7%	2.8%	61
Low-grade Paper	0.1%	0.1%	1	Other Untreated Wood	1.5%	1.6%	34
Waxed OCC	0.0%	0.0%	0	Painted Wood	5.9%	4.3%	134
Pizza Boxes	0.0%	0.0%	0	Treated Wood	9.8%	8.1%	225
Compostable/Soiled Paper	0.0%	0.0%	0	Remainder/Composite Wood	0.8%	0.8%	18
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	0				
Non-comp. Single-use Food Service Paper	0.0%	0.0%	0	**C&D Waste**	**50.0%**		**1,144**
Remainder/Composite Paper	0.1%	0.1%	3	Concrete	0.0%	0.0%	0
				Clean Drywall	3.7%	4.7%	85
Plastic	**1.6%**		**36**	Other Drywall	1.5%	1.7%	35
#1 PET Bottles	0.0%	0.0%	0	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.0%	0.0%	0	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.2%	0.3%	4	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.0%	0.0%	0	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.0%	0.0%	0	Carpet	8.3%	7.3%	190
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	1.1%	1.3%	24
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	0	Soil, Rocks, and Sand	0.0%	0.0%	0
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	0	Ceramics and Brick	6.0%	10.4%	138
Other Clean PE Film	0.0%	0.0%	0	Remainder/Composite Construction	29.4%	25.4%	672
Other Film	0.4%	0.7%	10				
Durable Plastic Products	0.0%	0.0%	0	**E-Waste**	**0.0%**		**0**
Remainder/Composite Plastics	0.9%	1.4%	20	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**0.3%**		**6**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.0%	0.0%	0	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.0%	0.0%	0				
Brown Glass Containers	0.0%	0.0%	0	**Household Hazardous**	**0.0%**		**0**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.3%	0.5%	6	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**2.0%**		**46**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.1%	1	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	0	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.0%	0	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.1%	0.1%	1	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	0.6%	0.5%	14	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	1.3%	1.2%	29	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**0.9%**		**20**	**Other Waste**	**0.8%**		**19**
Food Waste, Vegetative	0.0%	0.0%	0	Furniture	0.5%	0.8%	12
Other Food Waste	0.0%	0.0%	0	Tires	0.0%	0.0%	0
Leaves and Grass	0.4%	0.6%	9	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.3%	0.3%	6	Non-distinct Fines	0.3%	0.5%	7
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	0.2%	0.2%	4				
Disposable Diapers	0.0%	0.0%	0				
Animal Excrement/Litter	0.0%	0.0%	0	**Totals**	**100.0%**		**2,287**
Remainder/Composite Organic	0.1%	0.1%	1	Sample Count			36

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Commercial Self-haul C&D

As shown in **Figure 3-29**, **C&D Waste** and **Wood Waste**, together, accounted for over 87 percent of commercial self-haul C&D disposed waste. The remaining **material classes** each were 3 percent or less of commercial self-haul C&D waste. As presented in **Figure 3-30**, recoverable and potentially recoverable materials, together, accounted for about 56 percent of the total by weight. Most of the recoverable material was Recyclable C&D and Wood, which accounted for almost half (45.5%) of the total waste stream.

Figure 3-29. Overview of
Commercial Self-haul (C&D) Disposed Waste
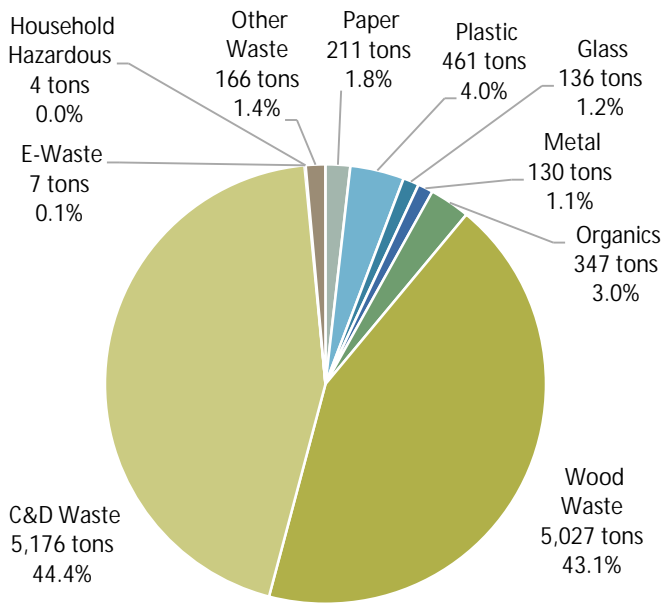
Figure 3-30. Summary of Recoverability of
Commercial Self-haul (C&D) Disposed Waste
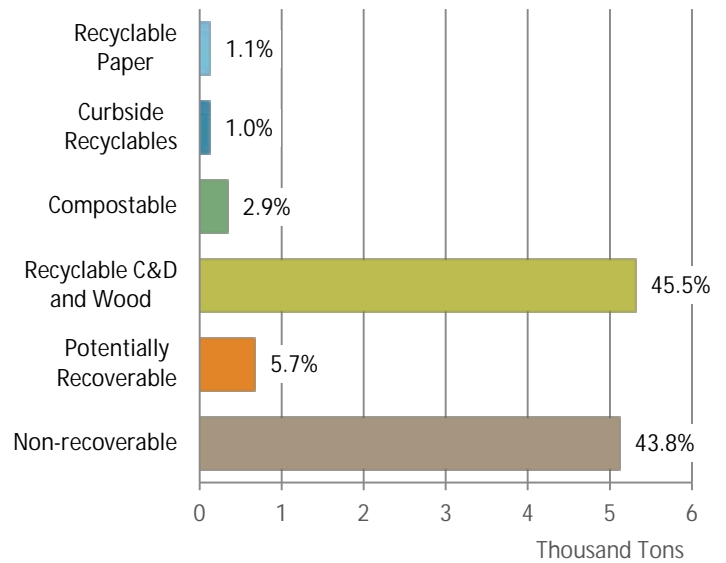
Table 3-34 shows that the top three *material types– dimensional lumber, remainder/composite construction,* and *pallets and crates –* made up more than one third (36.6%) of commercial self-haul C&D disposed waste.

Table 3-34. Ten Most Prevalent *Materials Types* in Commercial Self-haul (C&D) Disposed Waste

Material	Est. Percent	Cum. Percent	Est. Tons
Dimensional Lumber	14.6%	14.6%	1,709
Remainder/Composite Construction	13.4%	28.1%	1,568
Pallets and Crates	8.5%	36.6%	989
Other Drywall	7.9%	44.4%	917
Engineered Wood	7.1%	51.6%	833
Painted Wood	6.9%	58.4%	801
Other Asphalt Roofing	6.0%	64.5%	703
Soil, Rocks, and Sand	4.4%	68.8%	510
Carpet	2.9%	71.7%	336
Concrete	2.9%	74.6%	333
Total	**74.6%**		**8,699**

Detailed overall composition results by *material type* for this substream are shown in **Table 3-35**.

Table 3-35. Detailed Disposed Waste Composition Results: Commercial Self-haul (C&D)

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**1.8%**		**211**	**Wood Waste**	**43.1%**		**5,027**
Newspaper	0.0%	0.0%	1	Dimensional Lumber	14.6%	7.1%	1,709
Uncoated OCC/Kraft Paper	1.0%	0.9%	118	Pallets and Crates	8.5%	5.8%	989
High-grade Paper	0.0%	0.0%	1	Engineered Wood	7.1%	9.4%	833
Low-grade Paper	0.0%	0.0%	4	Other Untreated Wood	2.4%	3.7%	283
Waxed OCC	0.0%	0.0%	0	Painted Wood	6.9%	4.2%	801
Pizza Boxes	0.0%	0.0%	0	Treated Wood	2.8%	1.9%	324
Compostable/Soiled Paper	0.0%	0.0%	2	Remainder/Composite Wood	0.8%	0.6%	89
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	1				
Non-comp. Single-use Food Service Paper	0.0%	0.0%	0	**C&D Waste**	**44.4%**		**5,176**
Remainder/Composite Paper	0.7%	0.3%	85	Concrete	2.9%	2.5%	333
				Clean Drywall	1.3%	1.8%	149
Plastic	**4.0%**		**461**	Other Drywall	7.9%	3.6%	917
#1 PET Bottles	0.0%	0.0%	0	Asphalt Paving	0.2%	0.3%	18
#2 HDPE Bottles	0.0%	0.0%	0	Asphalt Shingles	1.3%	1.8%	153
#1-#7 Other Containers	0.1%	0.1%	11	Other Asphalt Roofing	6.0%	5.3%	703
Expanded Polystyrene Food grade	0.0%	0.0%	2	Insulation	0.7%	1.2%	79
Expanded Polystyrene Non-food Grade	0.5%	0.7%	54	Carpet	2.9%	2.4%	336
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	0.7%	0.6%	79
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	0	Soil, Rocks, and Sand	4.4%	5.0%	510
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	1	Ceramics and Brick	2.8%	3.0%	331
Other Clean PE Film	0.0%	0.0%	4	Remainder/Composite Construction	13.4%	12.1%	1,568
Other Film	0.8%	0.9%	93				
Durable Plastic Products	1.3%	2.1%	155	**E-Waste**	**0.1%**		**7**
Remainder/Composite Plastics	1.2%	1.4%	142	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**1.2%**		**136**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.0%	0.0%	0	Other Consumer Electronics	0.1%	0.1%	7
Green Glass Containers	0.0%	0.0%	0				
Brown Glass Containers	0.0%	0.0%	3	**Household Hazardous**	**0.0%**		**4**
Plate Glass	0.4%	0.7%	43	Pesticides and Herbicides	0.0%	0.1%	4
Remainder/Composite Glass	0.8%	0.9%	90	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**1.1%**		**130**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	0	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	0	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.0%	2	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.0%	0.0%	0	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	1	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	0.9%	0.8%	103	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	0.2%	0.2%	24	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**3.0%**		**347**	**Other Waste**	**1.4%**		**166**
Food Waste, Vegetative	0.0%	0.0%	0	Furniture	0.1%	0.2%	15
Other Food Waste	0.0%	0.0%	3	Tires	0.0%	0.0%	0
Leaves and Grass	2.4%	3.3%	277	Mattresses	1.3%	2.1%	151
Prunings and Trimmings	0.4%	0.3%	41	Non-distinct Fines	0.0%	0.0%	0
Branches and Stumps	0.1%	0.1%	10				
Textiles and Clothing	0.1%	0.2%	14				
Disposable Diapers	0.0%	0.0%	0				
Animal Excrement/Litter	0.0%	0.0%	0	**Totals**	**100.0%**		**11,667**
Remainder/Composite Organic	0.0%	0.0%	1	Sample Count			50

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

# Single-family Residential Curbside Organics Study

This section presents the tonnages associated with the single-family organics collected from curbside programs in the City of Tacoma along with detailed estimates about the composition and recoverability of materials.

Single-family Residential Organics Quantities

The City of Tacoma collected a total of 26,046 tons of organics through the single-family curbside collection program in 2015. The allocation of the organics collection over three seasons is shown in **Table 3-36** below. Detailed composition information by season is shown in **Appendix D: Additional Composition Results**.

Table 3-36. Estimated Tons of Organics by Season

Season	Tons	Percent of Total
Fall	8,317	32%
Spring	7,645	29%
Summer	10,084	39%
Total	**26,046**	**100%**

Organics Composition Results

As shown in **Figure 3-31**, slightly over 3 percent of the material in the single-family organics stream was Non-compostable and considered to be contaminants. **Figure 3-32** demonstrates that Food Waste was less than 5 percent of the organics stream; most of the organics collected was Yard Waste.

Figure 3-31. Overview of Overall Single-family Organics Stream

Other Compostables
84 tons
0.3%

Other Non-compostables
864 tons
3.3%

Organics
25,098 tons
96.4%
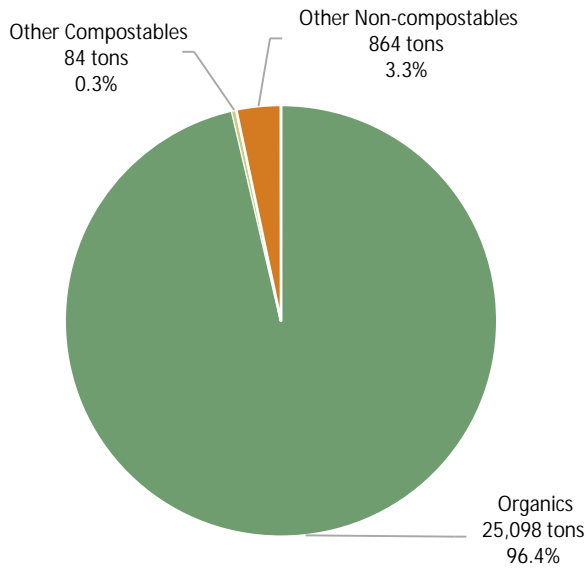
Figure 3-32. Summary of Recoverability of the Overall Single-family Organics Stream

Food Waste	4.6%
Yard Waste	91.7%
Compostable Paper	0.2%
Compostable Plastic	0.0%
Other Compostable	0.1%
Contaminants	3.3%

Thousands
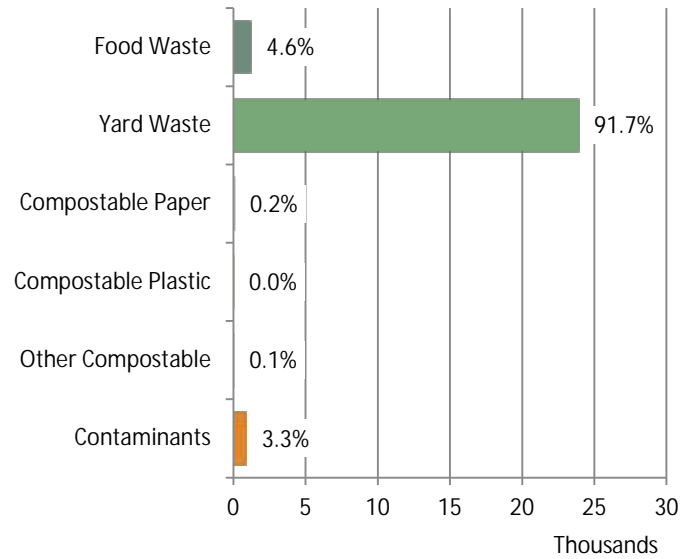
As **Table 3-37** details, *leaves, grass, prunings, and trimmings* accounted for 91.2 percent of the organics stream by weight.

Table 3-37. Five Most Prevalent *Materials Types* in the Overall Single-family Organics Stream

Material	Est. Percent	Cum. Percent	Est. Tons
Leaves, Grass, Prunings and Trimmings	91.2%	91.2%	23,752
Food Waste, Vegetative	3.7%	94.9%	967
Other Materials	2.9%	97.8%	765
Other Food Waste	0.9%	98.8%	237
Branches and Stumps	0.5%	99.3%	142
Total	**99.3%**		**25,863**

Table 3-38 presents detailed composition results for the single-family curbside organics stream by *material type*.

Table 3-38. Detailed Single-family Curbside Organics Composition Results: Overall

Material	Est. Percent	+ / -	Est. Tons
Organics	**96.4%**		**25,098**
Food Waste, Vegetative	3.7%	1.8%	967
Other Food Waste	0.9%	0.4%	237
Leaves, Grass, Prunings and Trimmings	91.2%	4.1%	23,752
Branches and Stumps	0.5%	0.8%	142
Other Compostables	**0.3%**		**84**
Waxed Corrugated Cardboard	0.0%	0.0%	0
Pizza Boxes	0.0%	0.0%	12
Compostable Paper	0.1%	0.0%	15
Newspaper	0.1%	0.1%	29
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	4
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	6
Other Compostable Organics	0.1%	0.1%	17
Other Compostables	**3.3%**		**864**
Uncoated Corrugated Cardboard/Kraft Paper	0.0%	0.0%	2
Mixed Recyclable Paper	0.0%	0.0%	6
Recyclable Polycoated Paper	0.0%	0.0%	0
Non-comp. Single-use Food Service Paper	0.0%	0.0%	2
Recyclable Plastic	0.0%	0.0%	4
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	1
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	1
Other Non-compostable Film	0.0%	0.0%	8
Recyclable Glass	0.0%	0.0%	10
Recyclable Metal	0.0%	0.0%	3
Animal Excrement And Litter	0.2%	0.2%	62
Other Materials	2.9%	3.7%	765
Totals	**100.0%**		**26,046**
Sample Count			180

Confidence intervals calculated at the 90% confidence level.

*Percentages for material types may not total 100% due to rounding.*

Appendix A: Definitions of Material Types

Diposed Waste Material Definitions

Disposed waste samples were sorted into the following 85 *material types*. Each *material type* is also designated recyclable, compostable, or not recyclable.

Paper

1. **Newspaper—**printed and unprinted groundwood newsprint and other minimally bleached groundwood. This category also includes the glossy paper insert advertisements if included with the newspaper. *(Recyclable)*

2. **Uncoated Corrugated Cardboard(OCC)/Kraft Paper—**Kraft linerboard, containerboard cartons, and shipping boxes with corrugated paper medium (unwaxed). This category also includes Kraft (brown) paper bags. Excludes waxed and plastic-coated cardboard, solid boxboard, and bags that are not pure unbleached Kraft. *(Recyclable)*

3. **High-grade Paper—**high-grade white or light-colored bond and copy machine papers and envelopes, and continuous-feed computer printouts and forms of all types, except multiple copy carbonless paper. Also includes index cards. *(Recyclable)*

4. **Low-grade Recyclable Paper—**magazines, phone books, junk mail, used envelopes, other material with sticky labels, construction paper, blueprint and thermal copy paper (NCR paper), fax paper, bright-dyed paper (fiesta or neon colors), paperback books, frozen food boxes, colored manila envelopes, gift wrapping paper, paperback books, polycoated containers (e.g., milk, ice cream), aseptic containers (e.g., soy milk, tofu), and groundwood catalogues. This category also includes other low-grade recyclable papers used in packaging, including chipboard and other solid boxboard such as for cases of beer and cereal, clothing forms, egg cartons (molded pulp), and other boxes. *(Recyclable)*

5. **Waxed Corrugated Cardboard (OCC) —**containerboard cartons, and shipping boxes with corrugated paper medium that are waxed coated. *(Compostable)*

6. **Pizza Boxes—**pizza boxes that are not plastic coated. *(Compostable)*

7. **Compostable Paper—**includes tissues and paper soiled with food, and paper towels. *(Compostable)*

8. **Potentially Compostable Single-use Food Service Paper—**paper plates, bowls, and cups, including wax-coated paper plates, bowls and cups and items labeled "compostable." Excludes items with visible plastic coating or lining. *(Compostable)*

9. **Non-compostable Single-use Food Service Paper—**paper plates, bowls, and cups not labeled "compostable" and that appear to have a plastic lining or coating. *(Not Recyclable)*

10. **Remainder/Composite Paper—**items that are primarily paper, but combined with other materials as well as paper not included above that is not easily recyclable. Includes frozen juice containers, cigarette packages, carbon paper, photographs, microwave containers, and hardcover books. *(Not Recyclable)*

Plastics

11. **#1 PET Bottles**—all bottles made from polyethylene terephthalate (PET), both colored and clear, as commonly used in beverage bottles. Usually bears the #1 on the bottom of the bottle. *(Recyclable)*

12. **#2 HDPE Bottles**—includes most milk jugs and water jugs, detergent bottles, orange juice jugs, some hair care product bottles, and any other plastic bottle bearing the #2. *(Recyclable)*

13. **#1-#7 Other Containers**—all other rigid plastic bottles, jars, and containers with codes 3 through 7, as well as all #1 PETE and #2 HDPE containers other than bottles. Examples include plastic food trays, medicine bottles, yogurt, and margarine tubs. Does not include expanded polystyrene (Styrofoam) packaging. *(Recyclable)*

14. **Expanded Polystyrene, Food Grade**—expanded polystyrene (EPS) packaging used for food. Includes food trays, cups, plates, clamshells, and other EPS food packaging. *(Not Recyclable)*

15. **Expanded Polystyrene, Non-food Grade**—expanded polystyrene (EPS) used in non-food applications such as shipment packaging and peanuts and insulation used in construction projects. *(Not Recyclable)*

16. **Potentially Compostable Single-use Food Service Plastics**—Includes clamshells, cups, cup lids, and salad trays labeled "compostable." Excludes clamshells, cups plates and bowls and other food service items made of Styrofoam. *(Compostable)*

17. **Non-compostable single-use Food Service Plastics**—Includes forks and spoons, clamshells, cups, cup lids, and salad trays not labeled "compostable." Excludes clamshells, cups plates and bowls and other food service items made of Styrofoam. *(Not Recyclable)*

18. **Clean Shopping/Dry Cleaner Bags**—labeled grocery and merchandise, dry cleaner, and newspaper polyethylene film bags that were not contaminated with food, liquid or grit during use. *(Recyclable)*

19. **Other Clean Polyethylene Film**—polyethylene film and bags, other than those identified above, which were not contaminated with food, liquid or grit during use. Includes clean plastic sheeting, mattress packaging, shrink wrap. *(Recyclable)*

20. **Other Film**—film packaging not defined above, or: was contaminated with food, liquid or grit during use; is woven together (e.g., grain bags); or that contains multiple layers of film or other materials that have been fused together (e.g., potato chip bags). This category also includes contaminated plastic sheeting, photographic negatives, shower curtains, any bags used to contain food or liquid (e.g., produce), garbage bags, and shopping bags used as garbage bags. *(Not Recyclable)*

21. **Durable Plastic Products**—finished plastic products made entirely of plastic such as toys, toothbrushes, vinyl hoses and plastic lawn furniture. Includes fiberglass resin products and materials, and durable plastic pots. *(Not Recyclable)*

22. **Remainder/Composite Plastic**— items that are primarily plastic, but combined with other materials as well as plastic items that do not fit into the above materials such as bottle caps and lids, disposable razors, pens, lighters, toys that include non-plastic parts, and 3-ring binders. *(Not Recyclable)*

Glass

23. **Clear Glass Containers**—bottles and jars that are clear in color; used for food, soft drinks, beer, and wine. *(Recyclable)*

24. **Green Glass Containers**—bottles and jars that are green in color; used for food, soft drinks, beer, and wine. *(Recyclable)*

25. **Brown Glass Containers**—bottles and jars that are brown in color; used for food, soft drinks, beer, and wine. *(Recyclable)*

26. **Plate Glass**—window glass and solid glass table tops. *(Not Recyclable)*

27. **Remainder/Composite Glass**—other types of glass products and scrap that do not fit into the above materials, including light bulbs, glassware, Pyrex, kitchen ceramics and cooking ware. *(Not Recyclable)*

Metals

28. **Aluminum Cans**—beverage cans composed of aluminum only. *(Recyclable)*

29. **Aluminum Foil/Containers**—aluminum foil, food trays and similar items. *(Recyclable)*

30. **Other Non-Ferrous**—metals that are not materials derived from iron, including copper, brass, bronze, aluminum bronze, lead, pewter, zinc, and other metals to which a magnet will not adhere. Metals that are significantly contaminated are not included. *(Recyclable)*

31. **Tinned Food Cans**—tin-plated steel cans (food cans) whether lined or unlined. Does not include other bi-metals, paint cans, or other types of steel cans. *(Recyclable)*

32. **Empty Aerosol Cans**—empty, mixed material/metal aerosol cans. (Aerosols that still contain product are sorted according to that material—for instance, paint.) *(Recyclable)*

33. **Major Appliances**—includes washers, driers, refrigerators, stoves, freezers and similar large metal appliances. *(Recyclable)*

34. **Oil Filters**—used metal oil filters, primarily those used in cars but possibly including similar filters from other types of vehicles and other applications. *(Recyclable)*

35. **Other Ferrous**—ferrous and alloyed ferrous scrap materials derived from iron, including household, industrial, and commercial products including other cans and containers. Includes paint and aerosol cans. This category includes scrap iron and steel to which a magnet adheres. *(Recyclable)*

36. **Remainder/Composite Metal**—items made of a mixture of ferrous and non-ferrous or a mixture of metal and non-metallic materials (as long as these are primarily metal). Includes some small appliances with power cords and insulated wire. *(Not Recyclable)*

Organics

37. **Food Waste, Vegetative**—fruit and vegetable scraps including the food container when the container weight is not appreciable compared to the food inside. *(Compostable)*

38. **Other Food Waste**—non-vegetative food waste including the food container when the container weight is not appreciable compared to the food inside. *(Compostable)*

39. **Leaves and Grass**—plant material, except woody material, from any public or private landscapes. Examples include leaves, grass clippings, plants, and seaweed. This type does not include woody material or material from agricultural sources. *(Compostable)*

40. **Prunings and Trimmings**—woody plant material up to 4 inches in diameter from any public or private landscape. Examples include prunings, shrubs, and small branches with branch diameters that do not exceed 4 inches. This type does not include stumps, tree trunks, branches exceeding 4 inches in diameter, or material from agricultural sources. *(Compostable)*

41. **Branches and Stumps**—woody plant material, branches, and stumps that exceed 4 inches in diameter, from any public or private landscape. *(Compostable)*

42. **Textiles and Clothing**—fabric materials including natural and man-made textile materials such as cottons, wools, silks, woven nylon, rayon, polyesters and other materials. Also includes upholstery, leather, and shoes. *(Not Recyclable)*

43. **Disposable Diapers**—diapers and similar products made from a combination of fibers, synthetic, and/or natural, and made for the purpose of a single use. Diapers that are all cloth and not originally intended for single use will be classified as a textile. This category includes fecal matter contained within, sanitary napkins and tampons, and adult disposable protective undergarments. *(Not Recyclable)*

44. **Animal Excrement and Litter**—feces from animals including kitty litter and bedding. *(Not Recyclable)*

45. **Remainder/Composite Organics**—examples include leather items, cork, hemp rope, garden hoses, rubber items, hair, wax, cigarette butts, lint, crayons, and any other organic material not categorized above or that is primarily organic but mixed with other materials. *(Not Recyclable)*

Wood Waste

46. **Dimensional Lumber**—clean dimensional lumber commonly used in construction for framing and related uses, including 2 x 4's, 2 x 6', etc. *(Recyclable)*

47. **Pallets and Crates**—clean, unpainted intact or broken pallets and crates *(Recyclable)*

48. **Engineered Wood**—clean engineered wood commonly used in construction for framing and related uses, including sheets of plywood, strandboard, and particle board. *(Recyclable)*

49. **Other Untreated Wood**—this type includes construction grade untreated/unpainted scrap from production of prefabricated wood products such as untreated cabinets and untreated or unpainted wood roofing and siding and that can't be included in the dimensional or engineered categories. *(Recyclable)*

50. **Painted Wood**—wood that has been painted, varnished or clear sealed. *(Not Recyclable)*

51. **Treated Wood**—wood treated with preservatives such as creosote, CCA and ACQ. This includes dimensional lumber and posts if treated, but does not include painted or varnished wood. This material may also include some plywood (especially "marine plywood"), strandboard, and other wood.in such a way that they cannot easily be separated, but consisting primarily (over 50 percent) of wood. Examples include wood with sheetrock attached. *(Not Recyclable)*

52. **Remainder/Composite Wood**—items that consist primarily of wood but that do not fit into the above materials, including composite materials that consist primarily (over 50%) of wood. Examples

of composites include wood with sheetrock nailed to it or with tiles glued to it (such that the materials cannot be easily separated). *(Not Recyclable)*

Construction Materials

53. **Concrete**—cement (mixed or unmixed), concrete blocks, and similar wastes. *(Recyclable)*

54. **Clean Drywall**—used or new gypsum wallboard, sheetrock or drywall present in recoverable amounts or pieces (generally any piece larger than two inches square will be recovered from the sample). *(Recyclable)*

55. **Other Drywall**—painted or otherwise contaminated gypsum wallboard, sheetrock or drywall. *(Not Recyclable)*

56. **Asphalt Paving**—a black or brown, tar-like material mixed with aggregate used as a road paving material. *(Recyclable)*

57. **Asphalt Shingles**—roofing material composed of fiberglass or organic felts saturated with asphalt and covered with inert aggregates as well as attached roofing tar and tar paper. Commonly known as three-tab roofing shingles but including older designs as well. *(Recyclable)*

58. **Other Asphalt Roofing**—other roofing material made with layers of felt, asphalt, aggregates, and attached roofing tar and tar paper normally used on flat/low pitched roofs usually on commercial buildings. Includes torch-down and hot-tar roofs. **(Not Recyclable)**

59. **Insulation**—includes all pad, roll, or blown-in types of insulation. *(Not Recyclable)*

60. **Carpet**—pieces of carpet and rugs made of similar material. *(Not Recyclable)*

61. **Carpet Padding**—foam rubber and other materials used as padding under carpets. *(Not Recyclable)*

62. **Soil, Rocks, Sand**—rock, gravel, soil, sand and similar naturally-occurring materials. *(Recyclable)*

63. **Ceramics and Brick**—includes clay, porcelain bricks and tiles, such as used toilets, sinks and bricks of various types and sizes. Does not include kitchen ceramics. *(Recyclable)*

64. **Remainder/Composite Construction Materials**—other construction and demolition materials that do not fit easily into the above materials or that are composites made up of two or more different materials. *(Not Recyclable)*

E-Waste

65. **Televisions and Other CRTs**—televisions and computer monitors containing a CRT (cathode ray tube). *(Recyclable)*

66. **Computers and Flat-screen Monitors**—towers, laptops, flat computer screens and portable computers. *(Recyclable)*

67. **Computer Peripherals**—keyboards, mice and mouse pads, printers, disk drives, etc. *(Not Recyclable)*

68. **Other Consumer Electronics**—other electronic goods that have some circuitry. Examples include non-portable products such as microwaves, stereos, VCRs, DVD players, large radios, and audio/visual equipment and portable electronics such as PDAs, cell phones, computer games, camcorders, and digital cameras. *(Not Recyclable)*

Household Hazardous/Special Waste

69. **Pesticides and Herbicides**—variety of chemicals whose purpose is to discourage or kill pests, weeds, or microorganisms. Fungicides and wood preservatives, such as pentachlorophenol, are also included. *(Not Recyclable)*

70. **Fluorescent Lighting**—includes both compact and tube-style fluorescent lighting. *(Recyclable)*

71. **Asbestos**—pure asbestos, and asbestos-containing products where the asbestos present is the most distinguishing characteristic of the material. *(Not Recyclable)*

72. **Paints, Solvents, and Adhesives**—water-based and solvent-based paints and varnishes, solvents, and thinners. Also includes glues and other adhesives such as rubber cement, wood putty, glazing and spackling compounds, caulking compounds, grout, and joint and auto body fillers. *(Not Recyclable)*

73. **Dry-cell Batteries**—dry-cell batteries of various sizes and types as commonly used in households. Includes cell phone and button cell batteries. Distinguish between single use batteries and rechargeable batteries. *(Recyclable)*

74. **Wet-cell Batteries**—wet-cell batteries of various sizes and types as commonly used in automobiles. *(Recyclable)*

75. **Gasoline and Kerosene**—gasoline, kerosene, diesel fuel, and fuel oils. *(Recyclable)*

76. **Motor Oil**—lubricating oils such as crankcase and transmission oil, gear oil, and hydraulic oil. *(Recyclable)*

77. **Vehicle and Equipment Fluids**—automobile and other equipment fluids such as break, power steering, antifreeze mixtures based on ethylene or propylene glycol. Does not include motor oil. *(Not Recyclable)*

78. **Medical Waste**—wastes related to medical activities, including syringes, intravenous (I.V.) tubing, bandages, medications, and other wastes. *(Not Recyclable)*

79. **Pharmaceuticals**—both prescription and over-the-counter medications and supplements in all forms, including pills, liquid medications, creams, and ointments. Does not include containers for these items, except for tubes for creams and ointments and other containers that cannot be easily separated from the product they contain. *(Not Recyclable)*

80. **Household Cleaners and Chemicals**—soaps, caustic and non-caustic cleaners, cosmetics, and other household chemicals. *(Not Recyclable)*

81. **Other Potentially Hazardous Waste**—other chemicals or potentially harmful wastes that do not fit into the above categories, including unidentifiable materials. *(Not Recyclable)*

Other Wastes

82. **Furniture**—furniture made of all materials and in any condition. *(Not Recyclable)*

83. **Tires**—tires manufactured for use on any type of vehicle such as trucks, automobiles, motorcycles, bicycles and heavy equipment. *(Recyclable)*

84. **Mattresses**—includes mattresses and box springs. *(Not Recyclable)*

85. **Non-distinct Fines**—this material will consist primarily of small pieces of multiple materials homogeneously mixed to such an extent that further sorting is difficult. *(Not Recyclable)*

Single-family Residential Curbside Organics Material Definitions

Single-family curbside organics samples were sorted into the following 23 *material types.* As with the waste *material types*, each *material type* is also labeled with its recoverability status: compostable, recyclable, or not recyclable.

Organics

1. **Food Waste, Vegetative**—fruit and vegetable scraps, peelings, and pits including the food container when the container weight is not appreciable compared to the food inside. *(Compostable)*

2. **Other Food Waste**—non-vegetative food waste such as meat, fish, dairy, shells, bones, grains, pasta, cereal, bread, coffee grounds, and tea bags including the food container when the container weight is not appreciable compared to the food inside. *(Compostable)*

3. **Leaves, Grass, Prunings and Trimmings**—plant material, including woody material, up to 4 inches in diameter from any public or private landscapes. Examples include leaves, grass clippings, plants, seaweed, prunings, shrubs, and small branches with diameters that do not exceed 4 inches. This type does not include woody material or material from agricultural sources. *(Compostable)*

4. **Branches and Stumps**—woody plant material, branches, and stumps that exceed 4 inches in diameter, from any public or private landscape. *(Compostable)*

Other Compostables

5. **Waxed Corrugated Cardboard**—containerboard cartons, and shipping boxes with corrugated paper medium that are waxed coated. *(Compostable)*

6. **Pizza Boxes**—pizza boxes that are not plastic coated. *(Compostable)*

7. **Compostable Paper**—includes tissues and paper soiled with food, and paper towels. *(Compostable)*

8. **Potentially Compostable Single-use Food Service Paper**—paper plates, bowls, and cups, including wax-coated paper plates, bowls and cups and items labeled "compostable." Excludes items with visible plastic coating or lining. *(Compostable)*

9. **Potentially Compostable Single-use Food Service Plastics**—Includes clamshells, cups, cup lids, and salad trays labeled "compostable." Excludes clamshells, cups plates and bowls and other food service items made of Styrofoam. *(Compostable)*

10. **Other Compostable Organics**—examples chopsticks, toothpicks, clean dimensional lumber, pallets, wood crates, burlap sacks, hemp rope, hair, wax, lint. *(Compostable)*

Other Non-compostables

11. **Newspaper**—printed and unprinted groundwood newsprint and other minimally bleached groundwood. This category also includes the glossy paper insert advertisements if included with the newspaper. *(Recyclable)*

12. **Uncoated Corrugated Cardboard/Kraft Paper**—Kraft linerboard, containerboard cartons, and shipping boxes with corrugated paper medium (unwaxed). This category also includes Kraft (brown) paper bags. Excludes waxed and plastic-coated cardboard, solid boxboard, and bags that are not pure unbleached Kraft. *(Recyclable)*

13. **Mixed Recyclable Paper**—includes high- and low-grade paper including white or light-colored bond and copy machine papers and envelopes, and continuous-feed computer printouts and forms of all types, except multiple copy carbonless paper. Also includes index cards. magazines, phone books, junk mail, used envelopes, other material with sticky labels, construction paper, blueprint and thermal copy paper (NCR paper), fax paper, bright-dyed paper (fiesta or neon colors), paperback books, frozen food boxes, colored manila envelopes, gift wrapping paper, paperback books, and groundwood catalogues. This category also includes other low-grade recyclable papers used in packaging, including chipboard and other solid boxboard such as for cases of beer and cereal, clothing forms, egg cartons (molded pulp), and other boxes. *(Recyclable)*

14. **Recyclable Polycoated Paper**—includes polycoated containers that would typically be recycled such as milk and juice cartons, ice cream containers, and aseptic containers (e.g., soy milk, tofu). *(Recyclable)*

15. **Non-compostable Single-use Food Service Paper**—paper plates, bowls, and cups not labeled "compostable" and that appear to have a plastic lining or coating. *(Not Recyclable)*

16. **Recyclable Plastic**—includes recyclable containers such as bottles, jugs, jars, and tubs of all plastic resin types (#1-#7). Items include soda and water bottles, milk jugs and water jugs, detergent bottles, orange juice jugs, some hair care product bottles, plastic food trays, medicine bottles, yogurt and margarine tubs. Does not include expanded polystyrene (Styrofoam) packaging. *(Recyclable)*

17. **Non-compostable Single-use Food Service Plastics**—Includes forks and spoons, clamshells, cups, cup lids, and salad trays not labeled "compostable." Includes food service items made of Styrofoam. *(Not Recyclable)*

18. **Clean Shopping/Dry Cleaner Bags**—labeled grocery and merchandise, dry cleaner, and newspaper polyethylene film bags that were not contaminated with food, liquid or grit during use. Also includes polyethylene film and bags, other than those identified above, which were not contaminated with food, liquid or grit during use. Includes clean plastic sheeting, mattress packaging, shrink wrap. *(Recyclable)*

19. **Other Non-compostable Film**—includes film packaging not defined above, or: was contaminated with food, liquid or grit during use; is woven together (e.g., grain bags); or that contains multiple layers of film or other materials that have been fused together (e.g., potato chip bags). This category also includes contaminated plastic sheeting, photographic negatives, shower curtains, any bags used to contain food or liquid (e.g., produce), garbage bags, and shopping bags used as garbage bags. *(Not Recyclable)*

20. **Recyclable Glass**—glass bottles and jars of any color; used for food, soft drinks, beer, and wine. *(Recyclable)*

21. **Recyclable Metal**—includes beverage cans composed of aluminum or tin aluminum foil, food trays and similar items, tin-plated steel cans (food cans) whether lined or unlined. Includes both ferrous and non-ferrous metals including copper, brass, bronze, aluminum bronze, lead, pewter, zinc, and other metals to which a magnet will not adhere *(Recyclable)*

22. **Animal Excrement and Litter—**feces from animals including kitty litter and bedding. *(Not Recyclable)*

23. **Other Materials—**All other material that do not fit into any of the above categories including furniture, tires, mattresses, and construction waste. *(Not Recyclable)*

Appendix B: Sampling Methodology

This appendix provides a detailed description of the methodology used to plan and execute Tacoma's 2015 waste composition study.

Overview

Study Objectives

In 2015, the City of Tacoma commissioned a detailed waste composition study that analyzed the waste stream from the residential, commercial, self-haul, and construction substreams over three seasons. The objective of the current study is to assess how the waste stream has changed since the 2015 study and provide baseline data to inform Tacoma's sustainable materials management plan and the assessment of MRF options. Additionally, this study provides baseline residential organics set-out and composition data to assist the City in planning for increased organics diversion.

Waste Substream Definitions

A "substream" is determined by the particular generation, collection, or composition characteristics that make it a unique portion of the total waste stream. This study targeted three main waste substreams in Tacoma: the residential, commercial, and self-haul substreams. These three substreams were further divided as shown in detail below.

Substream	
Residential—waste generated from single-family homes and multifamily buildings that is collected and transported by the City of Tacoma.	**Single-family**—waste generated from single-family dwellings and duplexes.
	Multifamily—waste generated from residential buildings with three or more dwelling units, including large apartment or condo buildings.
Commercial—waste generated by businesses, industries (e.g., factories, farms), institutions, and government (e.g., highways, parks) that is collected and transported by City of Tacoma garbage collection trucks.	**Commercial Packer (MSW)**—waste generated by a business or industry that is generated from a non-construction activity and hauled by the City of Tacoma in a front load, side load, or rear load packer truck.
	Commercial Roll-off (MSW)—waste generated by a business or industry that is generated from a non-construction activity and hauled by the City of Tacoma in an open-top or compacted roll-off box.
	Commercial Roll-off (C&D)—Waste generated by a business or industry that is generated from a construction activity at a business or residence and hauled by the City of Tacoma in open top roll-off boxes.

Substream	
Self-haul—waste that is a) generated at residences as well as businesses and institutions, and b) hauled by the household or business that generated the waste.	**Residential Self-haul (MSW)**—waste that is generated from a <u>non-construction</u> activity and hauled to the Tacoma Recovery and Transfer Center by a resident.
	Residential Self-haul (C&D)—waste that is generated from a <u>construction</u> activity and hauled to the Tacoma Recovery and Transfer Center by a resident.
	Commercial Self-haul (MSW)—waste that is generated from a <u>non-construction</u> activity and hauled to the Tacoma Recovery and Transfer Center by a commercial enterprise (such as a landscaper), including waste from residential dwellings.
	Commercial Self-haul (C&D)—waste that is generated from a <u>construction</u> activity and hauled to the Tacoma Recovery and Transfer Center by a commercial enterprise (such as a contractor), including waste from residential dwellings.
	School Waste—waste generated and hauled by the Tacoma Public Schools.

Single-family Residentail Curbside Organics Substream Definitions

This study also targeted the single-family residential organics substream. This substream was defined as organics set-out by single-family residents in yard waste containers for curbside collection by the City of Tacoma.

Detailed Sampling Calendar and Substream Allocations

Substream Allocations

The sampling crew collected and sorted samples during three week-long periods occurring in the spring, summer, and autumn of 2015, resulting in a total of 418 waste samples and 180 organics samples. The planned allocation of samples (402 waste and 180 organic samples) to the various substreams is shown below in **Table B-1**.

Table B-1: Overall Sample Allocations by Substream and Season

Waste Substream		Spring	Summer	Autumn	Total
RESIDENTIAL	Single Family	20	20	20	60
	Multifamily	10	10	10	30
COMMERICAL	Commercial Packer MSW	10	10	10	30
	Commercial Roll-off MSW	10	10	10	30
	Commercial Roll-off C&D	13	14	13	40
SELF-HAUL	Residential MSW Self-haul	27	26	27	80
	Residential C&D Self-haul	7	6	7	20
	Commercial MSW Self-haul	17	17	16	50
	Commercial C&D Self-haul	16	17	17	50
	School Waste	4	4	4	12

RESIDENTIAL	Total Residential	30	30	30	90
COMMERICAL	Total Commercial	33	34	33	100
SELF-HAUL	Total Self-haul	71	70	71	212
	Overall Total	134	134	134	402

Organics Substream		Spring	Summer	Autumn	Total
RESIDENTIAL	Single Family Organics	60	60	60	180

Sampling Calendar

The sampling calendar was designed to equally represent each season and to avoid sampling on or near major holidays. In addition, the schedule included an even distribution of samples across days of the week. As an example, **Table B-2** shows the sampling calendar for the summer sampling season by substream and day of the week. It reflects a total of 134 waste samples and 60 organics samples for the season.

Table B-2: Summer Season Calendar by Substream and Day of Week

Waste Substream		Sun 8/16	Mon 8/17	Tue 8/18	Wed 8/19	Thu 8/20	Fri 8/21	Total
RESIDENTIAL	Single Family	0	4	4	4	4	4	20
	Multifamily	0	2	2	2	2	2	10
COMMERICAL	Commercial Packer MSW	0	2	2	2	2	2	10
	Commercial Roll-off MSW	0	2	2	2	2	2	10
	Commercial Roll-off C&D	0	3	3	2	3	3	14
SELF-HAUL	Residential MSW Self-haul	20	1	1	2	1	1	26
	Residential C&D Self-haul	5	1	0	0	0	0	6
	Commercial MSW Self-haul	0	3	4	3	3	4	17
	Commercial C&D Self-haul	0	3	3	4	4	3	17
	School Waste	0	1	0	1	1	1	4
	Daily Total	25	22	21	22	22	22	134
Waste Substream		Sun 8/16	Mon 8/17	Tue 8/18	Wed 8/19	Thu 8/20	Fri 8/21	Total
RESIDENTIAL	Single Family Organics				60			60

Sampling Event Coordination

During each seasonal event, the sampling crew sampled waste and organics using two different methods. The crew collected and characterized waste samples at the transfer station as described below in *Waste Load Selection* and *Waste Sampling Procedures*. Organics samples were collected at the curb and sorted at the transfer station as described in *Organics Sampling Procedures*.

Waste Load Selection

Each seasonal event spanned five weekdays and one weekend day, alternating between Saturday and Sunday to capture any variation in incoming loads. The sampling crew sampled waste from all substreams Monday through Friday. Only self-haul vehicles were sampled on the weekend as the city does not collect residential and commercial waste on weekends. The strategies for selecting both weekday and weekend loads is described below by substream.

Residential (Single-family and Multifamily) and Commercial Packer MSW Loads

For scheduled residential and commercial routes, loads were selected the week prior to each sampling event. Typically, city trucks transport more than one load per shift. Since there are more vehicles per shift than the quota to be sampled, specific loads were designated for sampling by assigning an identifier to every expected load on a given sampling day. A random number generator sorted the identifiers by vehicle type; loads were selected in that sequence until the quota was reached for each vehicle type. *Vehicle Selection Forms* listed selected loads for each sampling day and a *Sample Placards* will be created for all selected loads (see **Appendix F: Field Forms**).

Prior to each sampling event, a sampling coordinator sent vehicle selection sheets and sample placards to route supervisors for each day of sampling. The sample coordinator also provided instruction sheets to the route supervisors; these sheets described the roles of route supervisors and drivers on sampling days. The route supervisors distributed *Sample Placards* to the drivers of the loads selected for sampling. The route supervisors also modified sample placards to reflect any changes to the anticipated drivers or truck numbers prior to distribution to ensure that vehicle identification and sample selection were carried out accurately.

This study was designed to sample pure loads from each of the substreams. On sampling days, drivers of selected routes that are normally mixed commercial and multifamily were required to modify their routes to collect pure commercial and multifamily loads.

Commercial Roll-offs (MSW and C&D)

Scheduled roll-off loads were selected for sampling as described above.

In the morning of each sampling day, unscheduled or on-call commercial roll-off loads were randomly selected using a list of roll-off accounts planned for that day provided by the route supervisor. The drivers of these loads did not receive pre-printed sample placards.

In addition, the sampling crew asked drivers of selected roll-off loads to provide additional information about their loads. Roll-off drivers were asked whether their load was generated from a C&D activity.

Additionally, the Sampling Crew Supervisor gave roll-off drivers a net weight card as they tipped their load and asked them to weigh out through the attended, rather than the automated, scale so that they could return the net weight card to the scalehouse attendant. (See Appendix F: Field Forms for a sample net weight card.) The Sampling Crew Supervisor collected the net weight cards from the scalehouse attendant at the end of each sampling day.

Self-haul (Residential and Commercial MSW, Residential and Commercial C&D, and School Waste)

For both weekday and weekend sampling events, scalehouse attendants systematically selected self-haul loads for sampling and directed selected vehicles to the sampling crew. Systematic selection consists of taking every "nth" vehicle that enters the facility at a randomly selected start time. The sampling intervals (*n*) were determined by dividing the day's expected number of arriving vehicles by the number of samples needed on that day. The expected traffic count was based on either the average weekday or weekend vehicle count from the same month from the previous year. The sampling intervals for each self-haul substream were listed on the *Self-haul Vehicle Selection Form* (**Appendix F: Field Forms**). When a self-haul vehicle was selected for sampling, the attendant placed a sample placard on that vehicle's windshield or dashboard and directed the vehicle to the field crew for sampling.

Prior to sampling, Cascadia sent scalehouse staff *Self-haul Vehicle Selection Forms*, *Sample Placards*, and instructions regarding their roles in both selecting self-haul and school waste vehicles and surveying self-haul vehicles.

We trained scalehouse staff to conduct a survey of self-haul vehicles that collects information on substreams (e.g., residential MSW self-haul, residential C&D self-haul). Scalehouse staff recorded this information and the net weights on the *Self-haul Vehicle Survey Forms* (see **Appendix F: Field Forms**). We used the survey data in the analysis to allocate tonnages to each self-haul substream.

Waste Sampling Procedures

The sampling crew used either a hand-sorting procedure or a visual characterization procedure to sort samples. Hand-sorting is the preferred method for loads that tend toward homogeneity (residential and commercial MSW), whereas visual characterization is more effective when heavy, bulky, and highly variable materials are expected (self-haul and C&D loads). Utilizing these two methods in parallel leads to a more representative characterization of each load and, therefore, the waste stream as a whole.

Table B-3 below shows which sampling procedure—hand-sorting or visual estimating—we applied to the various substreams.

Table B-3: Sampling Procedure by Substream

Waste Substream		Hand	Visual
RESIDENTIAL	Single Family	x	
	Multifamily	x	
COMMERICAL	Commercial Packer MSW	x	
	Commercial Roll-off MSW	x	
	Commercial Roll-off C&D		x
SELF-HAUL	Residential MSW Self-haul		x
	Residential C&D Self-haul		x
	Commercial MSW Self-haul		x
	Commercial C&D Self-haul		x
	School Waste	x	

Waste Substream		Hand	Visual
RESIDENTIAL	Single Family Organics	x	

Hand-sorting Procedure

Selected loads of residential and non-C&D commercial waste were dumped in an elongated pile five to seven feet high. From each load, the Sampling Crew Supervisor selected a sample using an imaginary 16-cell grid superimposed over the dumped material.

Figure B-1: 16-Cell Grid for Sampling
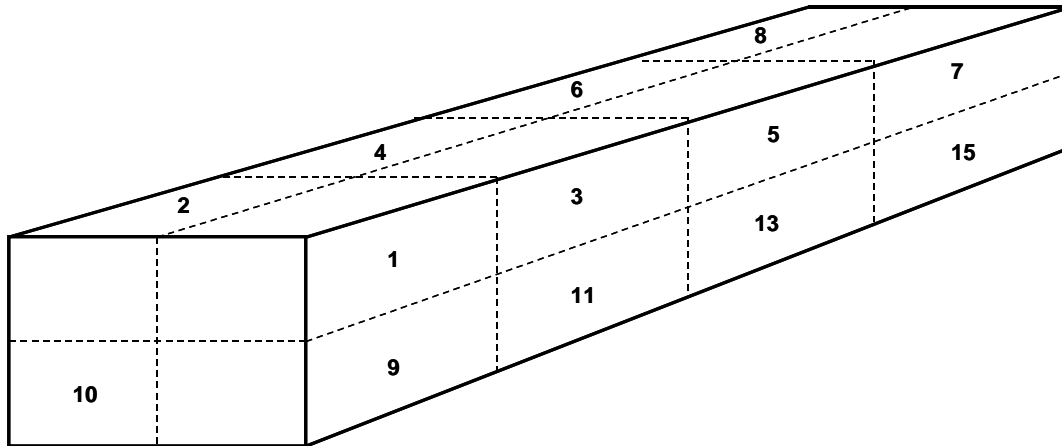
The Sampling Crew Supervisor identified the randomly selected cell to be extracted and ensured that the facility's loader operator obtained a sample of waste weighing approximately 200 pounds or larger from the selected cell and transported the sample to the characterization area.

Each sample was placed on a clean tarp and labeled for sorting. The sampling crew sorted each sample by hand into the component categories that were defined for the study (**Appendix A: Definitions of Material Types**). The crew placed sorted components in plastic laundry baskets to be weighed and recorded. The Sampling Crew Supervisor monitored the homogeneity of the component baskets as material accumulates, rejecting items which may have been improperly classified. Open laundry baskets allowed the Sampling Crew Supervisor to see the material at all times. The Sampling Crew Supervisor

also verified the purity of each component as it was weighed before recording the weight on the sampling form. The weights of all materials were recorded on tally sheets.

Visual Characterization Procedure

The sampling crew characterized all samples from the substreams marked as "Visual" in **Table B-3** using volumetric-based visual estimations. A trained crewmember used the following seven steps to characterize these loads:

Step 1. Obtain information about the load. The visual estimator recorded relevant information about the sample, such as the sample number, date, and driver/hauler info on the *Visual Characterization Tally Sheet* (see Appendix F: Field Forms)

Step 1. Photograph the sample. The crewmember took a photograph of the sample using a digital camera. The *Sample Placard* was positioned to be visible in each photograph (see Appendix F: Field Forms).

Step 2. Measure load volume. The crewmember used a tape measure to record the length, width, and height of the load on the *Visual Characterization Tally Sheet*.

Step 3. Note which material classes are present. After the driver dumped the load onto the ground, the crewmember walked entirely around the load and noted on the *Visual Characterization Tally Sheet* which **material classes** were present in the load. **Material classes** are identified with green headings in **Appendix A: Definitions of Material Types**.

Step 4. Estimate composition by volume for each material class. Beginning with the largest **material class** present (e.g., **Paper**), the crewmember estimated the volumetric percentage of this **material class** and recorded it on the form. The crewmember then repeated this process for the next most prevalent **material class**, until the volumetric percentage of every **material class** was estimated. The crewmember then calculated the sum of all **material class** volumetric percentages, ensuring that they totaled 100 percent.

Step 5. Estimate composition by volume for each *material type*. The crewmember considered *material types* within each material class separately and estimated the percentage of each *material type*. For example, *newspaper* is a *material type* within the **Paper material class**. While considering only the **Paper material class**, the crewmember estimated the volume percentage of *newspaper*. The crewmember did the same for every other *material type* within the **Paper material class** (e.g., *corrugated cardboard*, *compostable paper*). The crewmember then ensured that the summed estimated volumetric composition percentages of the *material types* equaled 100 percent.

Step 6. Check and reconcile percentage data. The crewmember ensured the percentage estimates for the **material classes** and for the *material types* within each material class totaled 100 percent.

Step 7. Convert volume estimates to weight estimates. At the Cascadia office, a crewmember entered data from the *Visual Characterization Tally Sheets* into a customized database and used accepted density conversion factors to develop estimates of the weight of each *material type* in each load.

The sampling crew thoroughly swept and cleaned the site after each day of work to ensure the site was left in good condition.

Organics Sampling Procedures

Each organics sampling event coincided with a waste sampling event. The organics sampling event spanned two days within the five weekdays of the waste event. The first of the organics days were a sample capture day. On the second day, the sampling crew hand sorted the samples at the transfer station. The procedure for capturing and sorting samples is discussed below.

Route Selection

Five organics collection areas were sampled on the selected sampling days. The city provided the route surveyors with a count of subscribers along each route as well as a route map with the route start location indicated. The route surveyors traversed each of the five collection areas, one surveyor per area, counting set-outs. An example of the set-out count form is included in **Appendix F: Field Forms**.

The route surveyor began traversing the route 30 minutes before the organics route driver began collection and covered the route in the same order as the route driver. This ensured that the surveyor remained sufficiently ahead of the driver to prevent any disruptions to regular collection operations while still allowing residents the maximum amount of time to set out their organics containers for counting and collection.

Sample Collection

The route surveyor was also responsible for selecting set-outs for sampling. Using a predetermined sampling interval, each route surveyor collected all material from 12 set-outs each day. We determined the sampling interval using the following procedure:

1. For each sampling day and collection area, the city provided the number of subscribers in the collection area. The number of subscribers (L) was reduced by one-fifth (producing 0.8 x L). This method ensured that samples were collected from the targeted number of set-outs on each sampling day, even if there were fewer set-outs than expected.

2. Next, the interval *n* was calculated to ensure systematic sampling of set-outs. The route surveyors selected every *n*th set-out for sampling. If *r* represents the number of samples needed, and 0.8 x L represents the number of expected set-outs, then $n = \dfrac{(0.8 \times L)}{r}$.

All the material from each set-out constituted a sample. Each sample was stored and labeled separately. An example sample label is included in **Appendix F: Field Forms**. After the route surveyor completed their route, they transported the samples to the transfer station for sorting.

Organics Hand-sorting Procedure

The sampling crew placed each sample on a clean tarp and labeled it for sorting. The crew sorted each sample by hand into the specific organics *material types* that had been defined for the study (**Appendix A: Definitions of Material Types**). The crew placed sorted components in plastic laundry baskets to be weighed and recorded. The Sampling Crew Supervisor monitored the homogeneity of the component baskets as material accumulated, rejecting items which may have been improperly classified. Open

laundry baskets allowed the Sampling Crew Supervisor to see the material at all times. The Sampling Crew Supervisor also verified the purity of each component as it was weighed before recording the weight on the sampling form. The weights of all materials were recorded on the hand sort tally sheets (see **Appendix F: Field Forms**).

Appendix C: Waste Composition Calculations

Converting Volumes to Weights

The composition calculations rely on the availability of individual material weights for each sample. For bulky and self-haul samples, Cascadia converted volume estimates to weights using accepted waste density conversion factors. These factors are listed in **Table C-3** at the end of this appendix, and data sources accompany the table.

Using the volume-to-weight conversion factors and the volume estimates obtained during the characterization of visual samples, individual material weights were calculated using the following formula: [5]

$$c = m \times s \times v \times d$$

where:

- § m = percentage estimate of the material, as a portion of **material class** (e.g., the extent to which *newspaper* constitutes all of the **Paper** in the sample)

- § s = percentage estimate of the **material class**, as a portion of all of the material in the sample (e.g., the extent to which **Paper** constitutes all of the material in the sample)

- § v = total volume of the sample (in cubic yards)

- § d = density conversion of the material (in pounds/cubic yard)

- § c = the total weight of the specific material in the sample

Each material weight was than scaled so that the sum of all material weights equaled the actual total sample weight (or net weight of the load).

Composition Calculations

The composition estimates represent the ratio of the *material type*'s weight to the total waste for each noted substream. They are derived by summing each material's weight across all of the selected records and dividing by the sum of the total weight of waste, as shown in the following equation:

$$r_j = \frac{\sum_i c_{ij}}{\sum_i w_i}$$

where:

§ c = weight of a particular material

§ w = sum of all material weights

§ for i = 1 to n

§ where n = number of selected samples

§ for j = 1 to m

§ where m = number of *material types*

The confidence interval for this estimate is derived in two steps. First, the variance around the estimate is calculated, accounting for the fact that the ratio includes two random variables (the material and total sample weights). The variance of the ratio estimator equation follows:

$$\hat{V}_{r_j} = \left(\frac{1}{n}\right) \times \left(\frac{1}{\overline{w}^2}\right) \times \left(\frac{\sum_i \left(c_{ij} - r_j w_i\right)^2}{n-1}\right)$$

where:

$$\overline{w} = \frac{\sum_i w_i}{n}$$

Second, precision levels at the 90% confidence interval are calculated for a material's mean as follows:

$$r_j \pm \left(t \times \sqrt{\hat{V}_{r_j}}\right)$$

where:

§ t = the value of the t-statistic (1.645) corresponding to a 90% confidence level

Weighted Averages

The overall city disposed waste and single-family residential curbside organics composition estimates were calculated by performing a weighted average across the substreams, seasons, and, in the case of single-family waste, collection districts. **Table C-1** lists the weighting percentages that were used to perform the overall waste composition calculations, and **Table C-2** lists the weighting percentages that were used to perform the organics composition calculations.

Table C-1. Weighting Percentages, Overall Disposed Waste

Substream	MSW or C&D	District	Season	Tons	Percent of Total

Substream		MSW or C&D	District	Season	Tons	Percent of Total
C&D	Commercial roll-off	C&D	N/A	Fall	3,952	5%
C&D	Commercial roll-off	C&D	All	Fall	983	3%
C&D	Commercial roll-off	C&D	All	Spring	1,560	1%
C&D	Commercial Self-haul	C&D	All	Summer	2,198	1%
C&D	Commercial Self-haul	C&D	All	Fall	5,626	1%
C&D	Commercial Self-haul	C&D	All	Spring	3,844	4%
C&D	Residential Self-haul	C&D	All	Summer	264	2%
C&D	Residential Self-haul	C&D	All	Fall	1,356	0%
C&D	Residential Self-haul	C&D	All	Spring	667	1%
Commercial	Commercial packer	MSW	All	Summer	8,008	0%
Commercial	Commercial packer	MSW	All	Fall	7,541	5%
Commercial	Commercial packer	MSW	All	Spring	7,637	5%
Commercial	Commercial roll-off	MSW	All	Summer	10,173	5%
Commercial	Commercial roll-off	MSW	All	Fall	11,839	6%
Commercial	Commercial roll-off	MSW	All	Spring	12,981	8%
Commercial	School	MSW	All	Summer	981	8%
Commercial	School	MSW	All	Fall	786	1%
Commercial	School	MSW	All	Spring	701	0%
Residential	Multifamily	MSW	All	Summer	3,964	0%
Residential	Multifamily	MSW	All	Fall	3,751	3%
Residential	Multifamily	MSW	All	Spring	3,741	2%
Residential	Single-family	MSW	All	Summer	2,180	2%

Substream		MSW or C&D	District	Season	Tons	Percent of Total
Residential	Single-family	MSW	District 5 (Friday)	Fall	2,213	1%
Residential	Single-family	MSW	District 5 (Friday)	Spring	2,374	1%
Residential	Single-family	MSW	District 5 (Friday)	Summer	2,265	2%
Residential	Single-family	MSW	District 1 (Monday)	Fall	2,107	1%
Residential	Single-family	MSW	District 1 (Monday)	Spring	2,266	1%
Residential	Single-family	MSW	District 1 (Monday)	Summer	2,501	1%
Residential	Single-family	MSW	District 4 (Thursday)	Fall	2,325	2%
Residential	Single-family	MSW	District 4 (Thursday)	Spring	2,384	1%
Residential	Single-family	MSW	District 4 (Thursday)	Summer	2,427	2%
Residential	Single-family	MSW	District 2 (Tuesday)	Fall	2,151	2%
Residential	Single-family	MSW	District 2 (Tuesday)	Spring	2,204	1%
Residential	Single-family	MSW	District 2 (Tuesday)	Summer	2,760	1%
Residential	Single-family	MSW	District 3 (Wednesday)	Fall	2,457	2%
Residential	Single-family	MSW	District 3 (Wednesday)	Spring	2,554	2%

Substream		MSW or C&D	District	Season	Tons	Percent of Total
Self-haul	Commercial Self-haul	MSW	District 3 (Wednesday)	Summer	7,456	2%
Self-haul	Commercial Self-haul	MSW	All	Fall	3,921	5%
Self-haul	Commercial Self-haul	MSW	All	Spring	6,163	2%
Self-haul	Residential Self-haul	MSW	All	Summer	4,178	4%
Self-haul	Residential Self-haul	MSW	All	Fall	3,173	3%
Self-haul	Residential Self-haul	MSW	All	Spring	5,213	2%
Total					157,824	100%

Table C-2. **Weighting Percentages, Overall Single-family Residential Curbside Organics**

Substream	Season	Tons	Percent of Total
Single-family	Fall	8,317	32%
Single-family	Spring	7,645	29%
Single-family	Summer	10,084	39%
Total		**26,046**	26,046

The weighted average for an overall composition estimate is performed as follows:

$$O_j = \left(p_1 * r_{j1} \right) + \left(p_2 * r_{j2} \right) + \left(p_3 * r_{j3} \right) + \dots$$

where:

§   p = the proportion of tonnage contributed by the noted sample group

§   r = ratio of material weight to total waste weight in the noted sample group

§   for j = 1 to m

§   where m = number of *material types*

The variance of the weighted average is calculated as:

$$VarO_j = (p_1^2 * \hat{V}_{r_{j1}}) + (p_2^2 * \hat{V}_{r_{j2}}) + (p_3^2 * \hat{V}_{r_{j3}}) + \dots$$

Table C-3. Volume-to-weight Conversion Factors

Material Type	Conversion Factor	Source
Newspaper	360	U.S. EPA
Uncoated OCC/Kraft Paper	100	CIWMB2004
High-grade Paper	158	U.S. EPA
Low-grade Paper	158	U.S. EPA
Compostable/Soiled Paper	138	Starbucks
Remainder/Composite Paper	364	U.S. EPA
#1 PET Bottles	35	U.S. EPA
#2 HDPE Bottles	24	U.S. EPA
#1-#7 Other Containers	35	U.S. EPA
Expanded Polystyrene, Food Grade	32	CIWMB2004
Expanded Polystyrene, Non-food Grade	32	CIWMB2004
Clean Shopping/Dry Cleaning Bags	36	Tellus
Other Clean PE Film	36	CIWMB2005
Other Film	23	Tellus
Durable Plastic Products	50	U.S. EPA
Remainder/Composite Plastics	50	U.S. EPA
Clear Glass Containers	600	U.S. EPA
Green Glass Containers	600	U.S. EPA
Brown Glass Containers	600	U.S. EPA
Plate Glass	1,400	U.S. EPA
Remainder/Composite Glass	1,400	U.S. EPA
Aluminum Beverage Cans	65	U.S. EPA
Aluminum Foil/Containers	48	Tellus
Other Nonferrous	225	U.S. EPA
Tin Food Cans	150	U.S. EPA
Empty Aerosol Cans	150	U.S. EPA
Major Appliances	167	U.S. EPA
Oil filters	834	Tellus
Other Ferrous	225	CIWMB2004

Material Type	Conversion Factor	Source
Remainder/Composite Metal	143	Average of metals, without Used Oil Filters
Food Waste, Vegetative	1,443	Tellus
Other Food Waste	486	FEECO, Tellus
Leaves & Grass	313	U.S. EPA
Prunings and Trimmings	127	CIWMB2004
Branches and Stumps	127	CIWMB2004
Textiles/Clothing	225	Tellus
Disposable Diapers	540	Tellus
Animal Excrement/Litter	675	FEECO
Remainder/Composite Organic	225	Average of all organics materials, except Manure
Dimensional Lumber	169	CIWMB2004
Pallets and Crates	169	CIWMB2004
Engineered Wood	268	CIWMB2004
Other Untreated Wood	169	CIWMB2004
Painted Wood	169	CIWMB2004
Treated Wood	169	CIWMB2004
Remainder/Composite Wood	169	CIWMB2004
Concrete	860	CIWMB2004
Clean Drywall	467	CIWMB2004
Other Drywall	467	CIWMB2004
Asphalt Paving	773	Tellus scaled down by factor from Florida C&D study
Asphalt Shingles	731	CIWMB2004
Other Asphalt Roofing	731	CIWMB2004
Insulation	17	Tellus
Carpet	147	CIWMB2004
Carpet Padding	62	CIWMB2004
Soil, Rocks, Sand	964	CIWMB2004
Ceramics and Brick	860	CIWMB2004
Remainder/Composite Construction	417	CIWMB2004
Televisions and CRTs	405	CIWMB2004
Computers/Flat Monitors	763	Tellus

Material Type	Conversion Factor	Source
Computer Peripherals	354	CIWMB2004
Other Consumer Electronics	438	CIWMB2004
Pesticides/Herbicides	1,505	U.S. EPA
Fluorescent Lighting	300	Cascadia Measurement
Asbestos	17	Tellus
Paints/Solvents/Adhesives	1,836	Tellus
Dry-cell Batteries	2,400	MN State
Wet-cell Batteries	2,400	MN State
Gasoline/Kerosene	1,653	Tellus
Motor Oil	1,525	Tellus
Vehicle/Equipment Fluids	1,653	Tellus
Medical Wastes	64	Cascadia and CIWMB
Pharmaceuticals	486	FEECO, Tellus
House Cleaners/Chemicals	1,505	U.S. EPA
Other Potentially Hazardous	1,671	Average of HHW liquids
Furniture	80	Tellus
Tires	200	CIWMB Staff Estimate
Mattresses & Box Springs	80	Tellus
Non-distinct Fines	999	FEECO

Sources:

§ **Cascadia** refers to direct measurements of representative samples taken by Cascadia staff members for this and other studies.

§ **CIWMB** refers to measurements, estimates, or correspondence from California Integrated Waste Management Board staff during 2006.

§ **CIWMB 2004** refers to *Targeted Statewide Waste Characterization Study: Detailed Characterization of Construction and Demolition Waste*, performed by Cascadia Consulting Group for California Integrated Waste Management Board, 2006.

§ **FEECO** refers to FEECO International, Complete Systems and Equipment Handbook, 9th printing.

§ **Florida C&D Study** refers to Converting C&D Debris from Volume to Weight: A Fact Sheet for C&D Debris Facility Operators, University of Florida, 2000.

§ **San Diego** refers to conversion factors that were used in the San Diego Waste Comp. Study, conducted by Cascadia Consulting Group in 2000.

§ **Tellus** refers to the Tellus Institute, Boston, Massachusetts.

§ **U.S. EPA** refers to the U.S. Environmental Protection Agency's "Measuring Recycling: A Guide for State and Local Governments," document no. EPA530-R-97-011, published September 1997.

Appendix D: Additional Composition Results

Detailed Residential Disposed Waste Tables

Table D-1. Detailed Disposed Waste Composition Results: Single-family, Spring

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**18.3%**		**2,061**	**Wood Waste**	**0.9%**		**107**
Newspaper	1.8%	0.8%	198	Dimensional Lumber	0.1%	0.1%	13
Uncoated OCC/Kraft Paper	0.9%	0.5%	96	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	1.5%	0.6%	165	Engineered Wood	0.1%	0.1%	8
Low-grade Paper	5.1%	1.1%	575	Other Untreated Wood	0.2%	0.3%	28
Waxed OCC	0.0%	0.0%	0	Painted Wood	0.1%	0.2%	16
Pizza Boxes	0.3%	0.2%	37	Treated Wood	0.3%	0.5%	33
Compostable/Soiled Paper	5.7%	1.0%	640	Remainder/Composite Wood	0.1%	0.1%	9
Pot. Comp. Single-use Food Service Paper	0.9%	0.4%	106				
Non-comp. Single-use Food Service Paper	0.8%	0.3%	85	**C&D Waste**	**0.6%**		**69**
Remainder/Composite Paper	1.4%	0.6%	158	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**16.0%**		**1,806**	Other Drywall	0.0%	0.0%	0
#1 PET Bottles	1.6%	0.4%	179	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.8%	0.2%	89	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	1.8%	0.4%	201	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	1.0%	0.2%	108	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.0%	6	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.4%	0.1%	47	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.3%	0.2%	34	Soil, Rocks, and Sand	0.3%	0.5%	32
Clean Shopping/Dry Cleaning Bags	1.5%	0.4%	167	Ceramics and Brick	0.3%	0.4%	33
Other Clean PE Film	0.1%	0.2%	12	Remainder/Composite Construction	0.0%	0.1%	4
Other Film	6.2%	1.1%	701				
Durable Plastic Products	1.2%	0.7%	141	**E-Waste**	**0.3%**		**38**
Remainder/Composite Plastics	1.1%	1.1%	122	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**3.3%**		**376**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	1.2%	0.4%	139	Other Consumer Electronics	0.3%	0.4%	38
Green Glass Containers	0.5%	0.2%	61				
Brown Glass Containers	1.2%	0.4%	138	**Household Hazardous**	**0.6%**		**71**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.3%	0.2%	38	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**3.6%**		**400**	Paints, Solvents, and Adhesives	0.6%	0.9%	63
Aluminum Beverage Cans	0.4%	0.1%	50	Dry-cell Batteries	0.0%	0.0%	2
Aluminum Foil/Containers	0.3%	0.1%	34	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.2%	0.2%	26	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	1.0%	0.3%	117	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.1%	0.1%	16	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	1
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.1%	4
Other Ferrous	0.9%	0.6%	103	House Cleaners and Chemicals	0.0%	0.0%	1
Remainder/Composite Metal	0.5%	0.3%	53	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**56.0%**		**6,302**	**Other Waste**	**0.2%**		**24**
Food Waste, Vegetative	16.1%	2.2%	1,811	Furniture	0.0%	0.0%	0
Other Food Waste	13.5%	2.7%	1,521	Tires	0.0%	0.0%	0
Leaves and Grass	2.9%	1.9%	328	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	0.2%	0.3%	24
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	4.4%	1.4%	494				
Disposable Diapers	8.7%	2.6%	975				
Animal Excrement/Litter	9.8%	3.6%	1,104	**Totals**	**100.0%**		**11,253**
Remainder/Composite Organic	0.6%	0.5%	69	Sample Count			21

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-2. Detailed Disposed Waste Composition Results: Single-family, Summer

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**16.4%**		**1,930**	**Wood Waste**	**1.8%**		**208**
Newspaper	1.3%	0.3%	154	Dimensional Lumber	0.5%	0.4%	59
Uncoated OCC/Kraft Paper	1.5%	0.3%	175	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	0.6%	0.3%	67	Engineered Wood	0.0%	0.0%	2
Low-grade Paper	4.7%	0.7%	555	Other Untreated Wood	0.3%	0.2%	34
Waxed OCC	0.0%	0.0%	3	Painted Wood	0.8%	0.6%	96
Pizza Boxes	0.3%	0.1%	38	Treated Wood	0.0%	0.1%	5
Compostable/Soiled Paper	5.7%	0.6%	677	Remainder/Composite Wood	0.1%	0.2%	12
Pot. Comp. Single-use Food Service Paper	1.2%	0.2%	146				
Non-comp. Single-use Food Service Paper	0.2%	0.1%	20	**C&D Waste**	**1.8%**		**212**
Remainder/Composite Paper	0.8%	0.2%	95	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**9.6%**		**1,134**	Other Drywall	0.2%	0.2%	21
#1 PET Bottles	0.8%	0.1%	95	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.5%	0.1%	61	Asphalt Shingles	0.4%	0.6%	46
#1-#7 Other Containers	0.9%	0.1%	108	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.3%	0.1%	40	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.0%	9	Carpet	0.5%	0.5%	58
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	1	Carpet Padding	0.1%	0.2%	14
Non-comp. Single-use Food Service Plastic	0.4%	0.1%	43	Soil, Rocks, and Sand	0.2%	0.4%	27
Clean Shopping/Dry Cleaning Bags	0.8%	0.1%	99	Ceramics and Brick	0.1%	0.2%	16
Other Clean PE Film	0.0%	0.0%	4	Remainder/Composite Construction	0.3%	0.4%	30
Other Film	3.7%	0.5%	438				
Durable Plastic Products	1.2%	0.4%	139	**E-Waste**	**0.1%**		**11**
Remainder/Composite Plastics	0.8%	0.3%	97	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**2.6%**		**301**	Computer Peripherals	0.1%	0.1%	11
Clear Glass Containers	1.2%	0.2%	139	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.4%	0.2%	51				
Brown Glass Containers	0.8%	0.3%	91	**Household Hazardous**	**0.3%**		**38**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.2%	0.1%	21	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**3.9%**		**457**	Paints, Solvents, and Adhesives	0.1%	0.1%	9
Aluminum Beverage Cans	0.3%	0.1%	34	Dry-cell Batteries	0.1%	0.1%	11
Aluminum Foil/Containers	0.2%	0.1%	27	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.5%	0.2%	60	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.4%	0.1%	51	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.2%	0.1%	18	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.1%	4	Pharmaceuticals	0.0%	0.0%	3
Other Ferrous	1.0%	0.6%	123	House Cleaners and Chemicals	0.1%	0.1%	15
Remainder/Composite Metal	1.2%	0.6%	140	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**62.4%**		**7,356**	**Other Waste**	**1.1%**		**134**
Food Waste, Vegetative	21.4%	1.7%	2,520	Furniture	0.0%	0.0%	0
Other Food Waste	6.0%	1.0%	704	Tires	0.0%	0.1%	5
Leaves and Grass	0.8%	0.6%	93	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	1	Non-distinct Fines	1.1%	0.3%	130
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	5.3%	1.5%	629				
Disposable Diapers	12.2%	1.5%	1,434				
Animal Excrement/Litter	15.2%	2.1%	1,786	**Totals**	**100.0%**		**11,782**
Remainder/Composite Organic	1.6%	0.5%	189	Sample Count			20

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-3. Detailed Disposed Waste Composition Results: Single-family, Fall

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**18.5%**		**2,245**	**Wood Waste**	**0.7%**		**87**
Newspaper	1.5%	0.6%	184	Dimensional Lumber	0.2%	0.2%	23
Uncoated OCC/Kraft Paper	1.4%	0.3%	167	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	1.2%	0.7%	148	Engineered Wood	0.1%	0.1%	11
Low-grade Paper	5.2%	0.7%	630	Other Untreated Wood	0.1%	0.1%	7
Waxed OCC	0.0%	0.0%	0	Painted Wood	0.3%	0.2%	33
Pizza Boxes	0.3%	0.2%	39	Treated Wood	0.0%	0.0%	2
Compostable/Soiled Paper	5.8%	1.6%	701	Remainder/Composite Wood	0.1%	0.1%	10
Pot. Comp. Single-use Food Service Paper	1.0%	0.4%	121				
Non-comp. Single-use Food Service Paper	0.7%	0.4%	88	**C&D Waste**	**2.1%**		**254**
Remainder/Composite Paper	1.4%	0.5%	167	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**12.8%**		**1,548**	Other Drywall	1.0%	1.4%	116
#1 PET Bottles	0.9%	0.2%	106	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.5%	0.1%	63	Asphalt Shingles	0.2%	0.3%	20
#1-#7 Other Containers	1.6%	0.4%	199	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.5%	0.2%	63	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.0%	14	Carpet	0.0%	0.1%	4
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	3	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.3%	0.1%	41	Soil, Rocks, and Sand	0.9%	1.4%	104
Clean Shopping/Dry Cleaning Bags	0.3%	0.1%	40	Ceramics and Brick	0.0%	0.1%	5
Other Clean PE Film	0.0%	0.0%	3	Remainder/Composite Construction	0.0%	0.1%	6
Other Film	6.9%	1.2%	838				
Durable Plastic Products	0.9%	0.4%	103	**E-Waste**	**0.1%**		**7**
Remainder/Composite Plastics	0.6%	0.2%	75	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**2.8%**		**339**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	1.1%	0.3%	132	Other Consumer Electronics	0.1%	0.1%	7
Green Glass Containers	0.5%	0.3%	60				
Brown Glass Containers	1.0%	0.4%	118	**Household Hazardous**	**0.3%**		**38**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.2%	0.1%	29	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**3.1%**		**377**	Paints, Solvents, and Adhesives	0.2%	0.3%	20
Aluminum Beverage Cans	0.5%	0.2%	56	Dry-cell Batteries	0.0%	0.0%	4
Aluminum Foil/Containers	0.4%	0.2%	48	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.0%	0	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	1.0%	0.2%	117	Motor Oil	0.0%	0.1%	5
Empty Aerosol Cans	0.2%	0.2%	29	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	3
Other Ferrous	0.4%	0.4%	47	House Cleaners and Chemicals	0.0%	0.1%	5
Remainder/Composite Metal	0.7%	0.4%	79	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**59.3%**		**7,199**	**Other Waste**	**0.3%**		**39**
Food Waste, Vegetative	20.2%	2.2%	2,447	Furniture	0.0%	0.0%	0
Other Food Waste	7.5%	1.6%	913	Tires	0.0%	0.0%	0
Leaves and Grass	1.4%	0.9%	170	Mattresses	0.3%	0.4%	31
Prunings and Trimmings	0.1%	0.1%	6	Non-distinct Fines	0.1%	0.1%	8
Branches and Stumps	0.2%	0.3%	24				
Textiles and Clothing	4.9%	1.9%	599				
Disposable Diapers	10.8%	1.7%	1,308				
Animal Excrement/Litter	13.5%	2.4%	1,639	**Totals**	**100.0%**		**12,134**
Remainder/Composite Organic	0.8%	0.3%	92	Sample Count			20

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-4. Detailed Disposed Waste Composition Results: Single-family, District 1 (Monday)

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**17.8%**		**1,180**	**Wood Waste**	**1.6%**		**104**
Newspaper	1.8%	1.0%	117	Dimensional Lumber	0.3%	0.3%	19
Uncoated OCC/Kraft Paper	1.1%	0.4%	72	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	0.9%	0.8%	61	Engineered Wood	0.0%	0.0%	1
Low-grade Paper	4.4%	0.8%	290	Other Untreated Wood	0.1%	0.1%	4
Waxed OCC	0.0%	0.0%	0	Painted Wood	1.2%	0.9%	77
Pizza Boxes	0.4%	0.3%	25	Treated Wood	0.0%	0.0%	0
Compostable/Soiled Paper	6.1%	0.8%	406	Remainder/Composite Wood	0.0%	0.1%	3
Pot. Comp. Single-use Food Service Paper	1.7%	0.7%	116				
Non-comp. Single-use Food Service Paper	0.1%	0.1%	6	**C&D Waste**	**0.7%**		**45**
Remainder/Composite Paper	1.3%	0.8%	88	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**10.0%**		**661**	Other Drywall	0.1%	0.2%	8
#1 PET Bottles	0.8%	0.3%	55	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.5%	0.1%	36	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	1.1%	0.5%	75	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.2%	0.1%	14	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.1%	5	Carpet	0.1%	0.1%	4
Pot. Comp. Single-use Food Service Plastic	0.1%	0.1%	7	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.2%	0.1%	15	Soil, Rocks, and Sand	0.5%	0.7%	30
Clean Shopping/Dry Cleaning Bags	0.5%	0.2%	34	Ceramics and Brick	0.0%	0.0%	1
Other Clean PE Film	0.0%	0.0%	0	Remainder/Composite Construction	0.0%	0.0%	1
Other Film	3.9%	1.1%	257				
Durable Plastic Products	0.8%	0.4%	51	**E-Waste**	**0.0%**		**0**
Remainder/Composite Plastics	1.7%	1.8%	111	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**4.2%**		**280**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	1.3%	0.6%	86	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.9%	0.4%	63				
Brown Glass Containers	1.8%	0.5%	117	**Household Hazardous**	**0.1%**		**7**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.2%	0.1%	14	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**3.3%**		**221**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.3%	0.1%	22	Dry-cell Batteries	0.0%	0.0%	2
Aluminum Foil/Containers	0.2%	0.1%	13	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.1%	0.2%	10	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.6%	0.1%	39	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.1%	0.0%	5	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.1%	0.1%	4
Other Ferrous	1.4%	0.9%	93	House Cleaners and Chemicals	0.0%	0.0%	1
Remainder/Composite Metal	0.6%	0.4%	41	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**62.4%**		**4,140**	**Other Waste**	**0.0%**		**0**
Food Waste, Vegetative	15.2%	2.9%	1,006	Furniture	0.0%	0.0%	0
Other Food Waste	10.4%	2.2%	692	Tires	0.0%	0.0%	0
Leaves and Grass	2.3%	1.4%	151	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.1%	0.2%	6	Non-distinct Fines	0.0%	0.0%	0
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	4.4%	1.2%	290				
Disposable Diapers	12.1%	2.3%	801				
Animal Excrement/Litter	16.9%	2.3%	1,122	**Totals**	**100.0%**		**6,638**
Remainder/Composite Organic	1.1%	0.8%	73	Sample Count			12

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-5. Detailed Disposed Waste Composition Results: Single-family, District 2 (Tuesday)

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**17.6%**		**1,193**	**Wood Waste**	**1.1%**		**75**
Newspaper	2.0%	1.2%	136	Dimensional Lumber	0.2%	0.2%	15
Uncoated OCC/Kraft Paper	1.4%	0.7%	96	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	1.4%	0.7%	94	Engineered Wood	0.1%	0.1%	4
Low-grade Paper	5.0%	1.3%	339	Other Untreated Wood	0.1%	0.1%	6
Waxed OCC	0.0%	0.0%	0	Painted Wood	0.2%	0.3%	17
Pizza Boxes	0.3%	0.1%	18	Treated Wood	0.5%	0.8%	34
Compostable/Soiled Paper	5.1%	1.3%	348	Remainder/Composite Wood	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Paper	1.1%	0.5%	72				
Non-comp. Single-use Food Service Paper	0.2%	0.2%	13	**C&D Waste**	**3.7%**		**253**
Remainder/Composite Paper	1.1%	0.6%	77	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**11.4%**		**774**	Other Drywall	1.6%	2.4%	108
#1 PET Bottles	0.8%	0.5%	56	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.5%	0.2%	33	Asphalt Shingles	0.3%	0.5%	20
#1-#7 Other Containers	1.1%	0.2%	72	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.6%	0.2%	41	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.0%	6	Carpet	0.0%	0.0%	1
Pot. Comp. Single-use Food Service Plastic	0.1%	0.0%	6	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.3%	0.1%	17	Soil, Rocks, and Sand	1.5%	2.4%	101
Clean Shopping/Dry Cleaning Bags	0.7%	0.3%	47	Ceramics and Brick	0.3%	0.4%	20
Other Clean PE Film	0.2%	0.3%	12	Remainder/Composite Construction	0.1%	0.1%	4
Other Film	5.3%	1.4%	359				
Durable Plastic Products	1.2%	0.6%	80	**E-Waste**	**0.0%**		**0**
Remainder/Composite Plastics	0.7%	0.2%	45	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**2.1%**		**145**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	1.0%	0.3%	69	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.3%	0.2%	23				
Brown Glass Containers	0.6%	0.5%	38	**Household Hazardous**	**0.3%**		**22**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.2%	0.2%	16	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**4.5%**		**304**	Paints, Solvents, and Adhesives	0.1%	0.2%	9
Aluminum Beverage Cans	0.4%	0.1%	25	Dry-cell Batteries	0.1%	0.1%	7
Aluminum Foil/Containers	0.3%	0.1%	18	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.1%	0.2%	10	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.8%	0.4%	53	Motor Oil	0.1%	0.1%	5
Empty Aerosol Cans	0.1%	0.1%	7	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	1
Oil filters	0.1%	0.1%	4	Pharmaceuticals	0.0%	0.0%	1
Other Ferrous	1.2%	1.0%	85	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	1.5%	1.1%	102	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**58.8%**		**3,987**	**Other Waste**	**0.4%**		**28**
Food Waste, Vegetative	18.3%	2.2%	1,244	Furniture	0.0%	0.0%	0
Other Food Waste	5.7%	1.7%	387	Tires	0.1%	0.1%	5
Leaves and Grass	2.6%	2.1%	175	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	0.3%	0.6%	24
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	5.8%	3.3%	396				
Disposable Diapers	10.4%	2.6%	706				
Animal Excrement/Litter	14.7%	4.5%	999	**Totals**	**100.0%**		**6,782**
Remainder/Composite Organic	1.2%	0.8%	80	Sample Count			12

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-6. Detailed Disposed Waste Composition Results: Single-family, District 3 (Wednesday)

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**15.7%**		**1,223**	**Wood Waste**	**0.8%**		**62**
Newspaper	1.0%	0.4%	81	Dimensional Lumber	0.1%	0.2%	8
Uncoated OCC/Kraft Paper	1.5%	0.6%	118	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	0.5%	0.5%	39	Engineered Wood	0.1%	0.1%	4
Low-grade Paper	4.3%	0.8%	337	Other Untreated Wood	0.1%	0.2%	11
Waxed OCC	0.0%	0.1%	3	Painted Wood	0.2%	0.2%	16
Pizza Boxes	0.3%	0.1%	24	Treated Wood	0.0%	0.0%	0
Compostable/Soiled Paper	4.7%	0.9%	363	Remainder/Composite Wood	0.3%	0.3%	22
Pot. Comp. Single-use Food Service Paper	1.5%	0.6%	115				
Non-comp. Single-use Food Service Paper	0.5%	0.5%	41	**C&D Waste**	**0.9%**		**72**
Remainder/Composite Paper	1.3%	0.4%	103	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**14.1%**		**1,097**	Other Drywall	0.1%	0.1%	6
#1 PET Bottles	1.3%	0.3%	98	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.6%	0.1%	46	Asphalt Shingles	0.0%	0.0%	1
#1-#7 Other Containers	1.5%	0.4%	117	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.7%	0.2%	56	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.0%	7	Carpet	0.1%	0.1%	6
Pot. Comp. Single-use Food Service Plastic	0.3%	0.1%	20	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.3%	0.1%	23	Soil, Rocks, and Sand	0.4%	0.7%	32
Clean Shopping/Dry Cleaning Bags	1.2%	0.3%	94	Ceramics and Brick	0.3%	0.6%	27
Other Clean PE Film	0.0%	0.0%	3	Remainder/Composite Construction	0.0%	0.0%	0
Other Film	6.4%	1.3%	495				
Durable Plastic Products	1.1%	0.6%	85	**E-Waste**	**0.1%**		**5**
Remainder/Composite Plastics	0.7%	0.3%	51	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**2.4%**		**187**	Computer Peripherals	0.1%	0.1%	5
Clear Glass Containers	1.0%	0.4%	77	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.4%	0.4%	31				
Brown Glass Containers	0.8%	0.4%	58	**Household Hazardous**	**0.4%**		**31**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.3%	0.2%	20	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**3.8%**		**299**	Paints, Solvents, and Adhesives	0.3%	0.4%	20
Aluminum Beverage Cans	0.6%	0.3%	43	Dry-cell Batteries	0.0%	0.0%	2
Aluminum Foil/Containers	0.6%	0.2%	47	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.0%	0	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	1.1%	0.3%	87	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.4%	0.4%	30	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.1%	0.1%	5
Other Ferrous	0.5%	0.4%	39	House Cleaners and Chemicals	0.1%	0.1%	4
Remainder/Composite Metal	0.7%	0.4%	53	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**61.6%**		**4,786**	**Other Waste**	**0.1%**		**8**
Food Waste, Vegetative	23.4%	2.2%	1,820	Furniture	0.0%	0.0%	0
Other Food Waste	10.4%	2.8%	804	Tires	0.0%	0.0%	0
Leaves and Grass	1.8%	2.1%	139	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	1	Non-distinct Fines	0.1%	0.2%	8
Branches and Stumps	0.3%	0.5%	24				
Textiles and Clothing	4.0%	1.9%	313				
Disposable Diapers	11.3%	2.8%	875				
Animal Excrement/Litter	10.0%	2.9%	774	**Totals**	**100.0%**		**7,771**
Remainder/Composite Organic	0.5%	0.3%	35	Sample Count			12

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-7. Detailed Disposed Waste Composition Results: Single-family, District 4 (Thursday)

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**18.3%**		**1,323**	**Wood Waste**	**0.9%**		**68**
Newspaper	1.1%	0.7%	77	Dimensional Lumber	0.2%	0.1%	12
Uncoated OCC/Kraft Paper	1.0%	0.3%	70	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	1.3%	0.6%	97	Engineered Wood	0.2%	0.2%	13
Low-grade Paper	6.8%	1.5%	490	Other Untreated Wood	0.4%	0.5%	32
Waxed OCC	0.0%	0.0%	0	Painted Wood	0.0%	0.1%	3
Pizza Boxes	0.5%	0.3%	33	Treated Wood	0.1%	0.1%	5
Compostable/Soiled Paper	5.4%	2.4%	389	Remainder/Composite Wood	0.0%	0.0%	3
Pot. Comp. Single-use Food Service Paper	0.9%	0.3%	67				
Non-comp. Single-use Food Service Paper	0.6%	0.5%	43	**C&D Waste**	**0.5%**		**36**
Remainder/Composite Paper	0.8%	0.3%	58	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**15.1%**		**1,086**	Other Drywall	0.0%	0.0%	0
#1 PET Bottles	1.5%	0.2%	109	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.7%	0.2%	52	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	1.7%	0.3%	122	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.9%	0.3%	66	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.0%	5	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.2%	0.2%	16	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.4%	0.3%	31	Soil, Rocks, and Sand	0.0%	0.0%	0
Clean Shopping/Dry Cleaning Bags	1.0%	0.5%	72	Ceramics and Brick	0.1%	0.1%	6
Other Clean PE Film	0.0%	0.0%	1	Remainder/Composite Construction	0.4%	0.7%	30
Other Film	7.2%	1.2%	518				
Durable Plastic Products	0.7%	0.3%	52	**E-Waste**	**0.6%**		**44**
Remainder/Composite Plastics	0.6%	0.3%	40	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**3.5%**		**255**	Computer Peripherals	0.1%	0.1%	5
Clear Glass Containers	1.8%	0.3%	127	Other Consumer Electronics	0.5%	0.6%	39
Green Glass Containers	0.3%	0.2%	23				
Brown Glass Containers	1.3%	0.6%	91	**Household Hazardous**	**1.0%**		**70**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.2%	0.2%	14	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**2.4%**		**176**	Paints, Solvents, and Adhesives	0.9%	1.4%	63
Aluminum Beverage Cans	0.5%	0.1%	37	Dry-cell Batteries	0.1%	0.1%	5
Aluminum Foil/Containers	0.2%	0.1%	16	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.1%	0.2%	9	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.9%	0.3%	68	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.2%	0.1%	11	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	0.2%	0.1%	17	House Cleaners and Chemicals	0.0%	0.0%	1
Remainder/Composite Metal	0.3%	0.3%	18	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**57.1%**		**4,121**	**Other Waste**	**0.4%**		**32**
Food Waste, Vegetative	20.6%	3.0%	1,482	Furniture	0.0%	0.0%	0
Other Food Waste	6.8%	1.3%	493	Tires	0.0%	0.0%	0
Leaves and Grass	0.5%	0.5%	36	Mattresses	0.4%	0.7%	31
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	0.0%	0.0%	1
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	6.3%	2.3%	458				
Disposable Diapers	11.0%	2.4%	790				
Animal Excrement/Litter	10.6%	2.9%	768	**Totals**	**100.0%**		**7,211**
Remainder/Composite Organic	1.3%	0.4%	93	Sample Count			13

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-8. Detailed Disposed Waste Composition Results: Single-family, District 5 (Friday)

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**19.5%**		**1,317**	**Wood Waste**	**1.4%**		**94**
Newspaper	1.9%	0.5%	125	Dimensional Lumber	0.6%	0.7%	41
Uncoated OCC/Kraft Paper	1.2%	0.3%	82	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	1.3%	1.0%	90	Engineered Wood	0.0%	0.0%	0
Low-grade Paper	4.5%	0.9%	304	Other Untreated Wood	0.2%	0.2%	16
Waxed OCC	0.0%	0.0%	0	Painted Wood	0.5%	0.4%	33
Pizza Boxes	0.2%	0.1%	14	Treated Wood	0.0%	0.0%	0
Compostable/Soiled Paper	7.6%	1.6%	512	Remainder/Composite Wood	0.1%	0.1%	3
Pot. Comp. Single-use Food Service Paper	0.1%	0.1%	5				
Non-comp. Single-use Food Service Paper	1.3%	0.5%	90	**C&D Waste**	**1.9%**		**128**
Remainder/Composite Paper	1.4%	0.5%	94	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**12.9%**		**871**	Other Drywall	0.2%	0.4%	15
#1 PET Bottles	0.9%	0.2%	62	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.7%	0.2%	44	Asphalt Shingles	0.7%	1.0%	45
#1-#7 Other Containers	1.8%	0.6%	121	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.5%	0.2%	34	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.1%	8	Carpet	0.7%	0.8%	50
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	2	Carpet Padding	0.2%	0.4%	14
Non-comp. Single-use Food Service Plastic	0.5%	0.1%	32	Soil, Rocks, and Sand	0.0%	0.0%	0
Clean Shopping/Dry Cleaning Bags	0.9%	0.3%	59	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.0%	0.0%	2	Remainder/Composite Construction	0.1%	0.1%	4
Other Film	5.1%	1.2%	348				
Durable Plastic Products	1.7%	1.1%	114	**E-Waste**	**0.1%**		**6**
Remainder/Composite Plastics	0.7%	0.2%	47	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**2.2%**		**149**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.7%	0.2%	51	Other Consumer Electronics	0.1%	0.2%	6
Green Glass Containers	0.5%	0.4%	31				
Brown Glass Containers	0.6%	0.2%	43	**Household Hazardous**	**0.2%**		**16**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.4%	0.2%	24	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**3.5%**		**234**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.2%	0.1%	13	Dry-cell Batteries	0.0%	0.0%	2
Aluminum Foil/Containers	0.2%	0.1%	16	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.8%	0.3%	57	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.6%	0.2%	40	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.1%	0.0%	9	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	0.6%	0.6%	40	House Cleaners and Chemicals	0.2%	0.2%	14
Remainder/Composite Metal	0.9%	0.6%	59	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**56.5%**		**3,823**	**Other Waste**	**1.9%**		**130**
Food Waste, Vegetative	18.1%	3.0%	1,225	Furniture	0.0%	0.0%	0
Other Food Waste	11.2%	3.4%	761	Tires	0.0%	0.0%	0
Leaves and Grass	1.3%	1.1%	90	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	1.9%	0.6%	130
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	3.9%	1.0%	266				
Disposable Diapers	8.1%	2.4%	546				
Animal Excrement/Litter	12.8%	4.8%	867	**Totals**	**100.0%**		**6,768**
Remainder/Composite Organic	1.0%	0.4%	67	Sample Count			12

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-9. Detailed Disposed Waste Composition Results: Multifamily, Fall

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**18.8%**		**744**	**Wood Waste**	**2.4%**		**97**
Newspaper	1.7%	0.8%	67	Dimensional Lumber	0.1%	0.1%	4
Uncoated OCC/Kraft Paper	3.2%	0.8%	125	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	1.1%	0.9%	43	Engineered Wood	0.7%	0.8%	28
Low-grade Paper	5.7%	2.1%	224	Other Untreated Wood	0.4%	0.4%	15
Waxed OCC	0.0%	0.0%	0	Painted Wood	0.2%	0.2%	7
Pizza Boxes	0.4%	0.3%	18	Treated Wood	0.0%	0.0%	0
Compostable/Soiled Paper	5.5%	1.2%	219	Remainder/Composite Wood	1.1%	1.6%	44
Pot. Comp. Single-use Food Service Paper	0.4%	0.3%	16				
Non-comp. Single-use Food Service Paper	0.3%	0.2%	12	**C&D Waste**	**0.7%**		**30**
Remainder/Composite Paper	0.5%	0.2%	21	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**9.5%**		**378**	Other Drywall	0.1%	0.1%	3
#1 PET Bottles	1.2%	0.3%	47	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.6%	0.2%	24	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.8%	0.3%	33	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.4%	0.1%	15	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.2%	0.2%	9	Carpet	0.7%	1.1%	27
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	1	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.2%	0.1%	9	Soil, Rocks, and Sand	0.0%	0.0%	0
Clean Shopping/Dry Cleaning Bags	0.4%	0.2%	16	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.0%	0.0%	1	Remainder/Composite Construction	0.0%	0.0%	0
Other Film	4.0%	1.4%	158				
Durable Plastic Products	1.1%	0.7%	45	**E-Waste**	**0.7%**		**30**
Remainder/Composite Plastics	0.5%	0.3%	21	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**3.2%**		**126**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	2.0%	0.8%	81	Other Consumer Electronics	0.7%	1.2%	30
Green Glass Containers	0.1%	0.1%	5				
Brown Glass Containers	0.6%	0.3%	22	**Household Hazardous**	**0.9%**		**34**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.5%	0.3%	19	Fluorescent Lighting	0.0%	0.0%	1
				Asbestos	0.0%	0.0%	0
Metal	**3.5%**		**138**	Paints, Solvents, and Adhesives	0.1%	0.1%	3
Aluminum Beverage Cans	0.7%	0.3%	27	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.3%	0.1%	11	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.0%	0	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.7%	0.2%	27	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.1%	0.0%	3	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.6%	0.9%	23
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	0.8%	0.7%	31	House Cleaners and Chemicals	0.2%	0.3%	8
Remainder/Composite Metal	1.0%	0.7%	40	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**58.8%**		**2,332**	**Other Waste**	**1.4%**		**54**
Food Waste, Vegetative	18.9%	3.6%	749	Furniture	1.0%	1.7%	41
Other Food Waste	8.1%	3.0%	321	Tires	0.0%	0.0%	0
Leaves and Grass	6.2%	7.7%	246	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.1%	0.1%	4	Non-distinct Fines	0.3%	0.6%	14
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	4.8%	1.7%	191				
Disposable Diapers	10.6%	3.6%	420				
Animal Excrement/Litter	8.0%	2.9%	315	**Totals**	**100.0%**		**3,964**
Remainder/Composite Organic	2.2%	2.0%	86	Sample Count			10

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-10. Detailed Disposed Waste Composition Results: Multifamily, Spring

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**24.0%**		**901**	**Wood Waste**	**1.3%**		**50**
Newspaper	2.0%	1.0%	75	Dimensional Lumber	0.4%	0.6%	16
Uncoated OCC/Kraft Paper	3.3%	2.1%	123	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	1.4%	0.8%	53	Engineered Wood	0.0%	0.0%	0
Low-grade Paper	5.1%	1.8%	192	Other Untreated Wood	0.0%	0.0%	0
Waxed OCC	0.0%	0.0%	0	Painted Wood	0.0%	0.0%	0
Pizza Boxes	0.3%	0.1%	12	Treated Wood	0.6%	1.0%	23
Compostable/Soiled Paper	9.8%	1.5%	366	Remainder/Composite Wood	0.3%	0.5%	11
Pot. Comp. Single-use Food Service Paper	0.7%	0.4%	26				
Non-comp. Single-use Food Service Paper	0.3%	0.3%	10	**C&D Waste**	**2.3%**		**87**
Remainder/Composite Paper	1.1%	0.8%	43	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**15.2%**		**571**	Other Drywall	0.0%	0.0%	0
#1 PET Bottles	1.6%	0.6%	62	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.9%	0.4%	35	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	1.6%	0.7%	61	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.5%	0.3%	21	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.1%	2	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.5%	0.4%	20	Carpet Padding	0.6%	1.0%	23
Non-comp. Single-use Food Service Plastic	0.1%	0.1%	3	Soil, Rocks, and Sand	0.9%	1.2%	35
Clean Shopping/Dry Cleaning Bags	1.1%	0.5%	43	Ceramics and Brick	0.2%	0.3%	7
Other Clean PE Film	0.1%	0.1%	2	Remainder/Composite Construction	0.6%	1.0%	22
Other Film	5.8%	1.2%	216				
Durable Plastic Products	1.1%	0.6%	43	**E-Waste**	**1.6%**		**60**
Remainder/Composite Plastics	1.7%	1.6%	62	Televisions and CRTs	1.6%	2.7%	60
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**3.0%**		**112**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	1.3%	0.6%	48	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	1.0%	1.1%	37				
Brown Glass Containers	0.2%	0.2%	7	**Household Hazardous**	**0.1%**		**4**
Plate Glass	0.1%	0.1%	3	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.4%	0.3%	17	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**7.7%**		**288**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.7%	0.4%	24	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.4%	0.3%	15	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.1%	0.1%	2	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.7%	0.2%	26	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.3%	0.2%	11	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	3.5%	5.8%	133	Medical Wastes	0.1%	0.1%	3
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	1.1%	0.9%	41	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	1.0%	0.9%	36	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**44.7%**		**1,677**	**Other Waste**	**0.0%**		**0**
Food Waste, Vegetative	13.6%	2.6%	511	Furniture	0.0%	0.0%	0
Other Food Waste	11.1%	4.2%	417	Tires	0.0%	0.0%	0
Leaves and Grass	2.5%	2.7%	94	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	0.0%	0.0%	0
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	4.2%	1.0%	159				
Disposable Diapers	9.1%	3.6%	341				
Animal Excrement/Litter	2.5%	2.0%	94	**Totals**	**100.0%**		**3,751**
Remainder/Composite Organic	1.6%	1.2%	61	Sample Count			9

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-11. Detailed Disposed Waste Composition Results: Multifamily, Summer

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**17.5%**		**655**	**Wood Waste**	**0.7%**		**25**
Newspaper	1.6%	0.5%	61	Dimensional Lumber	0.0%	0.0%	1
Uncoated OCC/Kraft Paper	3.1%	1.4%	116	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	0.5%	0.5%	20	Engineered Wood	0.0%	0.0%	0
Low-grade Paper	5.3%	1.0%	199	Other Untreated Wood	0.1%	0.1%	3
Waxed OCC	0.0%	0.1%	2	Painted Wood	0.5%	0.4%	19
Pizza Boxes	0.2%	0.1%	6	Treated Wood	0.0%	0.0%	0
Compostable/Soiled Paper	5.1%	0.7%	190	Remainder/Composite Wood	0.0%	0.1%	2
Pot. Comp. Single-use Food Service Paper	0.8%	0.3%	29				
Non-comp. Single-use Food Service Paper	0.2%	0.1%	6	**C&D Waste**	**0.7%**		**28**
Remainder/Composite Paper	0.7%	0.3%	25	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**9.6%**		**359**	Other Drywall	0.0%	0.0%	0
#1 PET Bottles	1.1%	0.4%	40	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.6%	0.1%	21	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.8%	0.2%	29	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.4%	0.1%	14	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.2%	0.2%	9	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.4%	0.2%	15	Soil, Rocks, and Sand	0.2%	0.3%	9
Clean Shopping/Dry Cleaning Bags	0.8%	0.2%	29	Ceramics and Brick	0.5%	0.8%	19
Other Clean PE Film	0.1%	0.1%	2	Remainder/Composite Construction	0.0%	0.0%	0
Other Film	3.1%	0.2%	117				
Durable Plastic Products	1.6%	0.6%	60	**E-Waste**	**0.0%**		**0**
Remainder/Composite Plastics	0.6%	0.3%	23	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**3.9%**		**144**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	1.5%	0.6%	58	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.4%	0.3%	15				
Brown Glass Containers	0.1%	0.1%	4	**Household Hazardous**	**0.7%**		**27**
Plate Glass	0.2%	0.3%	6	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	1.6%	0.9%	61	Fluorescent Lighting	0.0%	0.1%	2
				Asbestos	0.0%	0.0%	0
Metal	**4.8%**		**180**	Paints, Solvents, and Adhesives	0.5%	0.7%	18
Aluminum Beverage Cans	0.4%	0.1%	16	Dry-cell Batteries	0.0%	0.0%	1
Aluminum Foil/Containers	0.3%	0.1%	11	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.1%	0.1%	4	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.6%	0.2%	22	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.1%	0.1%	4	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	1
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	2.9%	2.9%	108	House Cleaners and Chemicals	0.1%	0.2%	6
Remainder/Composite Metal	0.4%	0.3%	15	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**61.4%**		**2,297**	**Other Waste**	**0.7%**		**26**
Food Waste, Vegetative	25.6%	4.5%	959	Furniture	0.0%	0.0%	0
Other Food Waste	6.5%	3.3%	245	Tires	0.0%	0.0%	0
Leaves and Grass	1.3%	1.0%	48	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	0.7%	1.1%	26
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	7.1%	3.5%	266				
Disposable Diapers	12.1%	3.2%	451				
Animal Excrement/Litter	7.6%	1.8%	284	**Totals**	**100.0%**		**3,741**
Remainder/Composite Organic	1.2%	0.3%	44	Sample Count			11

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Detailed Commercial (non-C&D) Disposed Waste Tables

Table D-12. Detailed Disposed Waste Composition Results: Commercial Packer, Fall

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**17.7%**		**1,414**	**Wood Waste**	**2.8%**		**227**
Newspaper	0.9%	0.5%	74	Dimensional Lumber	0.2%	0.3%	20
Uncoated OCC/Kraft Paper	3.6%	1.3%	292	Pallets and Crates	1.4%	2.4%	115
High-grade Paper	0.7%	0.4%	59	Engineered Wood	0.6%	0.9%	46
Low-grade Paper	3.6%	1.8%	288	Other Untreated Wood	0.1%	0.1%	6
Waxed OCC	0.1%	0.1%	11	Painted Wood	0.0%	0.0%	2
Pizza Boxes	0.1%	0.1%	10	Treated Wood	0.3%	0.4%	25
Compostable/Soiled Paper	5.0%	1.7%	404	Remainder/Composite Wood	0.2%	0.3%	13
Pot. Comp. Single-use Food Service Paper	0.5%	0.5%	39				
Non-comp. Single-use Food Service Paper	1.7%	1.6%	135	**C&D Waste**	**2.0%**		**158**
Remainder/Composite Paper	1.3%	0.7%	104	Concrete	0.6%	1.0%	48
				Clean Drywall	0.0%	0.0%	0
Plastic	**13.6%**		**1,091**	Other Drywall	0.2%	0.4%	18
#1 PET Bottles	0.6%	0.3%	47	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.4%	0.2%	32	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	1.2%	1.0%	94	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.3%	0.1%	21	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.2%	0.1%	15	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.6%	0.3%	46	Soil, Rocks, and Sand	1.1%	1.9%	91
Clean Shopping/Dry Cleaning Bags	0.2%	0.1%	16	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	1.6%	2.0%	127	Remainder/Composite Construction	0.0%	0.0%	0
Other Film	5.9%	2.5%	472				
Durable Plastic Products	1.2%	1.1%	94	**E-Waste**	**0.0%**		**2**
Remainder/Composite Plastics	1.6%	1.3%	127	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**8.7%**		**697**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	2.0%	1.9%	162	Other Consumer Electronics	0.0%	0.0%	2
Green Glass Containers	0.5%	0.3%	37				
Brown Glass Containers	1.0%	1.2%	77	**Household Hazardous**	**0.4%**		**29**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	5.2%	8.3%	420	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**4.7%**		**374**	Paints, Solvents, and Adhesives	0.0%	0.1%	4
Aluminum Beverage Cans	0.4%	0.2%	32	Dry-cell Batteries	0.0%	0.0%	1
Aluminum Foil/Containers	0.1%	0.1%	7	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.0%	0	Gasoline/Kerosene	0.1%	0.1%	5
Tin Food Cans	0.1%	0.1%	10	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.1%	0.1%	6	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.2%	0.4%	20
Oil filters	0.1%	0.2%	9	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	2.7%	2.4%	219	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	1.1%	1.0%	92	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**46.1%**		**3,694**	**Other Waste**	**4.0%**		**323**
Food Waste, Vegetative	18.5%	6.4%	1,479	Furniture	0.0%	0.0%	0
Other Food Waste	7.5%	4.0%	602	Tires	0.0%	0.0%	0
Leaves and Grass	12.2%	12.3%	976	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	4.0%	5.1%	323
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	3.3%	1.8%	264				
Disposable Diapers	1.4%	1.6%	110				
Animal Excrement/Litter	2.1%	1.7%	168	**Totals**	**100.0%**		**8,008**
Remainder/Composite Organic	1.2%	0.6%	96	Sample Count			11

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-13. Detailed Disposed Waste Composition Results: Commercial Packer, Spring

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**28.0%**		**2,111**	**Wood Waste**	**8.5%**		**642**
Newspaper	1.1%	0.7%	79	Dimensional Lumber	0.5%	0.8%	36
Uncoated OCC/Kraft Paper	3.8%	2.6%	287	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	1.5%	1.3%	110	Engineered Wood	2.3%	3.5%	172
Low-grade Paper	4.1%	1.7%	307	Other Untreated Wood	0.0%	0.0%	0
Waxed OCC	1.9%	3.0%	141	Painted Wood	5.0%	7.0%	374
Pizza Boxes	0.3%	0.2%	22	Treated Wood	0.7%	1.1%	51
Compostable/Soiled Paper	7.3%	4.8%	550	Remainder/Composite Wood	0.1%	0.2%	8
Pot. Comp. Single-use Food Service Paper	1.1%	0.9%	82				
Non-comp. Single-use Food Service Paper	0.3%	0.5%	25	**C&D Waste**	**0.4%**		**33**
Remainder/Composite Paper	6.7%	7.4%	508	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**12.5%**		**940**	Other Drywall	0.0%	0.0%	0
#1 PET Bottles	0.7%	0.4%	55	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.9%	0.6%	70	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.6%	0.3%	43	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.5%	0.6%	36	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.1%	11	Carpet	0.4%	0.7%	33
Pot. Comp. Single-use Food Service Plastic	0.5%	0.4%	40	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.2%	0.2%	12	Soil, Rocks, and Sand	0.0%	0.0%	0
Clean Shopping/Dry Cleaning Bags	0.1%	0.1%	9	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.4%	0.7%	30	Remainder/Composite Construction	0.0%	0.0%	0
Other Film	6.9%	2.8%	521				
Durable Plastic Products	0.4%	0.5%	32	**E-Waste**	**0.2%**		**18**
Remainder/Composite Plastics	1.1%	1.3%	80	Televisions and CRTs	0.2%	0.4%	16
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**3.3%**		**247**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	1.1%	0.5%	85	Other Consumer Electronics	0.0%	0.0%	2
Green Glass Containers	0.4%	0.3%	29				
Brown Glass Containers	1.6%	2.1%	119	**Household Hazardous**	**0.6%**		**45**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.2%	0.2%	14	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**1.4%**		**104**	Paints, Solvents, and Adhesives	0.0%	0.0%	2
Aluminum Beverage Cans	0.3%	0.2%	23	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.2%	0.1%	13	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.0%	2	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.6%	0.3%	47	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.1%	0.1%	9	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.5%	0.7%	40
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	0.1%	0.1%	6	House Cleaners and Chemicals	0.0%	0.1%	2
Remainder/Composite Metal	0.0%	0.1%	3	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**45.0%**		**3,395**	**Other Waste**	**0.1%**		**5**
Food Waste, Vegetative	23.9%	7.8%	1,801	Furniture	0.0%	0.0%	0
Other Food Waste	12.1%	5.7%	911	Tires	0.0%	0.0%	0
Leaves and Grass	6.2%	7.6%	470	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.6%	1.0%	44	Non-distinct Fines	0.1%	0.1%	5
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	0.8%	0.5%	61				
Disposable Diapers	0.0%	0.1%	3				
Animal Excrement/Litter	0.8%	1.0%	58	**Totals**	**100.0%**		**7,541**
Remainder/Composite Organic	0.6%	0.5%	46	Sample Count			10

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-14. Detailed Disposed Waste Composition Results: Commercial Packer, Summer

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**23.4%**		**1,789**	**Wood Waste**	**7.0%**		**533**
Newspaper	1.4%	1.1%	108	Dimensional Lumber	4.1%	5.8%	317
Uncoated OCC/Kraft Paper	4.1%	1.7%	310	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	1.3%	1.0%	96	Engineered Wood	1.0%	0.9%	78
Low-grade Paper	5.7%	3.0%	432	Other Untreated Wood	0.0%	0.0%	1
Waxed OCC	0.0%	0.0%	0	Painted Wood	0.9%	1.0%	66
Pizza Boxes	0.1%	0.1%	10	Treated Wood	0.3%	0.5%	22
Compostable/Soiled Paper	7.0%	1.6%	534	Remainder/Composite Wood	0.7%	0.9%	50
Pot. Comp. Single-use Food Service Paper	1.5%	0.7%	111				
Non-comp. Single-use Food Service Paper	0.1%	0.1%	6	**C&D Waste**	**3.7%**		**281**
Remainder/Composite Paper	2.4%	1.2%	183	Concrete	1.2%	2.0%	93
				Clean Drywall	0.0%	0.0%	0
Plastic	**14.0%**		**1,069**	Other Drywall	1.9%	3.2%	147
#1 PET Bottles	0.9%	0.3%	71	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.5%	0.2%	38	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.6%	0.3%	47	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.1%	0.1%	11	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.3%	0.3%	24	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	1	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	1.0%	0.6%	74	Soil, Rocks, and Sand	0.5%	0.9%	41
Clean Shopping/Dry Cleaning Bags	0.4%	0.2%	33	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	2.6%	2.5%	197	Remainder/Composite Construction	0.0%	0.0%	0
Other Film	4.9%	0.9%	371				
Durable Plastic Products	1.1%	0.6%	87	**E-Waste**	**0.8%**		**60**
Remainder/Composite Plastics	1.5%	0.6%	114	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.8%	0.9%	60
Glass	**2.9%**		**221**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.9%	0.9%	71	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.6%	0.9%	48				
Brown Glass Containers	0.5%	0.3%	35	**Household Hazardous**	**3.4%**		**257**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.9%	0.5%	68	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**4.4%**		**334**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.3%	0.1%	27	Dry-cell Batteries	0.0%	0.0%	1
Aluminum Foil/Containers	0.1%	0.1%	10	Wet-cell Batteries	0.2%	0.3%	15
Other Non-ferrous	0.0%	0.0%	2	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	1.0%	0.8%	75	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.3%	0.2%	25	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	2.8%	3.7%	213
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	1.7%	1.5%	127	House Cleaners and Chemicals	0.3%	0.4%	20
Remainder/Composite Metal	0.9%	0.6%	68	Other Potentially Hazardous	0.1%	0.2%	9
Organics	**40.4%**		**3,083**	**Other Waste**	**0.1%**		**9**
Food Waste, Vegetative	18.6%	5.4%	1,418	Furniture	0.0%	0.0%	0
Other Food Waste	5.2%	1.8%	398	Tires	0.0%	0.0%	0
Leaves and Grass	1.4%	1.4%	107	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	0.1%	0.2%	9
Branches and Stumps	0.4%	0.7%	33				
Textiles and Clothing	6.1%	4.1%	464				
Disposable Diapers	4.6%	4.0%	348				
Animal Excrement/Litter	1.9%	2.0%	143	**Totals**	**100.0%**		**7,637**
Remainder/Composite Organic	2.3%	1.1%	172	Sample Count			10

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-15. Detailed Disposed Waste Composition Results: Commercial Roll-off, Fall

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**34.7%**		**3,533**	**Wood Waste**	**0.6%**		**65**
Newspaper	2.1%	2.1%	211	Dimensional Lumber	0.0%	0.1%	4
Uncoated OCC/Kraft Paper	6.7%	3.3%	683	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	2.0%	2.2%	203	Engineered Wood	0.6%	0.7%	56
Low-grade Paper	8.4%	5.4%	853	Other Untreated Wood	0.1%	0.1%	5
Waxed OCC	0.1%	0.2%	13	Painted Wood	0.0%	0.0%	0
Pizza Boxes	0.0%	0.0%	0	Treated Wood	0.0%	0.0%	0
Compostable/Soiled Paper	8.6%	4.8%	872	Remainder/Composite Wood	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Paper	0.6%	0.8%	57				
Non-comp. Single-use Food Service Paper	0.7%	0.6%	67	**C&D Waste**	**9.9%**		**1,004**
Remainder/Composite Paper	5.6%	6.1%	574	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**24.4%**		**2,484**	Other Drywall	0.0%	0.0%	0
#1 PET Bottles	0.6%	0.4%	58	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.3%	0.2%	27	Asphalt Shingles	3.7%	6.1%	381
#1-#7 Other Containers	0.8%	0.6%	84	Other Asphalt Roofing	0.0%	0.1%	3
Expanded Polystyrene Food grade	0.6%	0.5%	61	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.6%	1.0%	64	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	1	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.7%	0.7%	72	Soil, Rocks, and Sand	0.0%	0.0%	0
Clean Shopping/Dry Cleaning Bags	0.1%	0.1%	13	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	3.5%	5.9%	361	Remainder/Composite Construction	6.1%	10.1%	620
Other Film	9.2%	3.0%	932				
Durable Plastic Products	1.0%	0.7%	99	**E-Waste**	**0.0%**		**0**
Remainder/Composite Plastics	7.0%	10.2%	712	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**0.6%**		**61**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.5%	0.5%	50	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.0%	0.0%	2				
Brown Glass Containers	0.1%	0.1%	9	**Household Hazardous**	**0.0%**		**0**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.0%	0.0%	0	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**3.4%**		**342**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.2%	0.2%	25	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.1%	0.1%	11	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.1%	0.2%	10	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.2%	0.1%	16	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.1%	0.1%	5	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	1.5%	2.4%	154	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	1.2%	1.3%	122	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**26.4%**		**2,683**	**Other Waste**	**0.0%**		**0**
Food Waste, Vegetative	15.7%	10.1%	1,599	Furniture	0.0%	0.0%	0
Other Food Waste	4.0%	3.5%	412	Tires	0.0%	0.0%	0
Leaves and Grass	0.0%	0.0%	0	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	0.0%	0.0%	0
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	2.2%	2.0%	223				
Disposable Diapers	0.3%	0.4%	33				
Animal Excrement/Litter	0.0%	0.1%	4	**Totals**	**100.0%**		**10,173**
Remainder/Composite Organic	4.1%	4.6%	412	Sample Count			9

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-16. Detailed Disposed Waste Composition Results: Commercial Roll-off, Spring

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**26.0%**		**3,077**	**Wood Waste**	**16.9%**		**2,002**
Newspaper	0.9%	0.6%	101	Dimensional Lumber	1.8%	2.7%	219
Uncoated OCC/Kraft Paper	3.4%	2.7%	399	Pallets and Crates	10.2%	13.0%	1,207
High-grade Paper	2.4%	2.1%	288	Engineered Wood	4.0%	5.0%	475
Low-grade Paper	3.3%	1.8%	388	Other Untreated Wood	0.1%	0.2%	14
Waxed OCC	0.0%	0.0%	0	Painted Wood	0.2%	0.3%	29
Pizza Boxes	0.1%	0.1%	11	Treated Wood	0.0%	0.0%	0
Compostable/Soiled Paper	3.8%	2.3%	452	Remainder/Composite Wood	0.5%	0.8%	58
Pot. Comp. Single-use Food Service Paper	0.4%	0.3%	42				
Non-comp. Single-use Food Service Paper	0.4%	0.5%	52	**C&D Waste**	**5.8%**		**685**
Remainder/Composite Paper	11.4%	9.3%	1,345	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**13.2%**		**1,567**	Other Drywall	0.0%	0.0%	0
#1 PET Bottles	0.5%	0.3%	62	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.5%	0.2%	56	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.8%	0.4%	89	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.3%	0.3%	40	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.1%	10	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	1.0%	1.4%	122	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.1%	0.1%	15	Soil, Rocks, and Sand	3.8%	5.4%	449
Clean Shopping/Dry Cleaning Bags	0.2%	0.1%	21	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	2.2%	1.8%	264	Remainder/Composite Construction	2.0%	2.7%	236
Other Film	3.4%	1.3%	397				
Durable Plastic Products	1.6%	1.9%	186	**E-Waste**	**0.3%**		**33**
Remainder/Composite Plastics	2.6%	1.6%	306	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**3.6%**		**427**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	2.1%	2.5%	244	Other Consumer Electronics	0.3%	0.5%	33
Green Glass Containers	0.4%	0.5%	49				
Brown Glass Containers	0.9%	0.9%	110	**Household Hazardous**	**6.4%**		**763**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.2%	0.2%	23	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**2.7%**		**321**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.4%	0.2%	46	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	0	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.0%	0	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.2%	0.2%	29	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.1%	0.1%	9	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	6.4%	10.4%	762
Oil filters	0.1%	0.1%	9	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	1.5%	2.1%	180	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	0.4%	0.4%	48	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**24.5%**		**2,901**	**Other Waste**	**0.5%**		**63**
Food Waste, Vegetative	8.0%	4.3%	943	Furniture	0.0%	0.0%	0
Other Food Waste	6.4%	5.6%	761	Tires	0.0%	0.0%	0
Leaves and Grass	4.5%	4.8%	536	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	0.5%	0.9%	63
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	2.7%	2.1%	321				
Disposable Diapers	1.2%	1.6%	141				
Animal Excrement/Litter	0.0%	0.0%	0	**Totals**	**100.0%**		**11,839**
Remainder/Composite Organic	1.7%	1.8%	199	Sample Count			11

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-17. Detailed Disposed Waste Composition Results: Commercial Roll-off, Summer

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**16.6%**		**2,149**	**Wood Waste**	**10.2%**		**1,323**
Newspaper	1.6%	1.2%	211	Dimensional Lumber	7.5%	11.3%	972
Uncoated OCC/Kraft Paper	2.1%	0.7%	278	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	0.6%	0.4%	77	Engineered Wood	0.2%	0.3%	23
Low-grade Paper	2.3%	1.2%	294	Other Untreated Wood	0.1%	0.1%	8
Waxed OCC	0.6%	0.9%	73	Painted Wood	1.9%	2.7%	240
Pizza Boxes	0.1%	0.2%	14	Treated Wood	0.6%	1.0%	79
Compostable/Soiled Paper	5.9%	2.3%	771	Remainder/Composite Wood	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Paper	2.1%	1.3%	268				
Non-comp. Single-use Food Service Paper	0.0%	0.1%	5	**C&D Waste**	**1.1%**		**139**
Remainder/Composite Paper	1.2%	0.7%	157	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**19.5%**		**2,526**	Other Drywall	0.0%	0.0%	0
#1 PET Bottles	4.2%	4.4%	542	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.6%	0.7%	75	Asphalt Shingles	0.5%	0.8%	64
#1-#7 Other Containers	0.5%	0.3%	62	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.5%	0.4%	65	Insulation	0.6%	0.9%	75
Expanded Polystyrene Non-food Grade	0.1%	0.1%	15	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	1	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.8%	0.7%	104	Soil, Rocks, and Sand	0.0%	0.0%	0
Clean Shopping/Dry Cleaning Bags	0.3%	0.2%	44	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.3%	0.4%	35	Remainder/Composite Construction	0.0%	0.0%	0
Other Film	4.2%	1.4%	540				
Durable Plastic Products	3.8%	3.4%	496	**E-Waste**	**0.0%**		**0**
Remainder/Composite Plastics	4.2%	5.8%	548	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**6.7%**		**873**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	1.5%	1.3%	197	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.7%	0.8%	85				
Brown Glass Containers	1.9%	2.3%	250	**Household Hazardous**	**0.0%**		**5**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	2.6%	4.2%	341	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**5.5%**		**709**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.6%	0.6%	77	Dry-cell Batteries	0.0%	0.1%	5
Aluminum Foil/Containers	0.1%	0.1%	15	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.1%	6	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.2%	0.2%	26	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.5%	0.8%	60	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	3.5%	4.0%	458	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	0.5%	0.5%	66	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**39.9%**		**5,179**	**Other Waste**	**0.6%**		**79**
Food Waste, Vegetative	21.5%	9.0%	2,796	Furniture	0.0%	0.0%	0
Other Food Waste	5.9%	3.2%	765	Tires	0.0%	0.0%	0
Leaves and Grass	2.1%	2.3%	269	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	2	Non-distinct Fines	0.6%	1.0%	79
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	1.2%	0.7%	157				
Disposable Diapers	0.6%	0.6%	79				
Animal Excrement/Litter	3.8%	5.7%	491	**Totals**	**100.0%**		**12,981**
Remainder/Composite Organic	4.8%	6.8%	620	Sample Count			8

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-18. Detailed Disposed Waste Composition Results: School Waste, Fall

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**1.2%**		**12**	**Wood Waste**	**58.7%**		**575**
Newspaper	0.0%	0.0%	0	Dimensional Lumber	14.7%	1.9%	144
Uncoated OCC/Kraft Paper	0.2%	0.4%	2	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	0.0%	0.0%	0	Engineered Wood	0.0%	0.0%	0
Low-grade Paper	0.2%	0.3%	2	Other Untreated Wood	20.5%	2.6%	201
Waxed OCC	0.0%	0.0%	0	Painted Wood	23.5%	3.0%	230
Pizza Boxes	0.1%	0.1%	1	Treated Wood	0.0%	0.0%	0
Compostable/Soiled Paper	0.4%	0.9%	4	Remainder/Composite Wood	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Paper	0.1%	0.2%	1				
Non-comp. Single-use Food Service Paper	0.3%	0.7%	3	**C&D Waste**	**25.4%**		**249**
Remainder/Composite Paper	0.0%	0.0%	0	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**2.3%**		**23**	Other Drywall	24.8%	3.2%	243
#1 PET Bottles	0.0%	0.1%	0	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.0%	0.1%	0	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.1%	0.1%	1	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.0%	0.0%	0	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.0%	0.0%	0	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.0%	0.1%	0	Soil, Rocks, and Sand	0.0%	0.0%	0
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	0	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.0%	0.0%	0	Remainder/Composite Construction	0.5%	0.2%	5
Other Film	0.6%	1.1%	6				
Durable Plastic Products	1.5%	0.2%	14	**E-Waste**	**0.0%**		**0**
Remainder/Composite Plastics	0.1%	0.1%	1	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**0.0%**		**0**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.0%	0.0%	0	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.0%	0.0%	0				
Brown Glass Containers	0.0%	0.0%	0	**Household Hazardous**	**0.0%**		**0**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.0%	0.0%	0	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**0.1%**		**1**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	0	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	0	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.0%	0	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.1%	0.2%	1	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	0.0%	0.0%	0	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	0.0%	0.0%	0	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**3.6%**		**36**	**Other Waste**	**8.7%**		**85**
Food Waste, Vegetative	1.8%	3.8%	18	Furniture	8.7%	1.1%	85
Other Food Waste	0.5%	1.0%	5	Tires	0.0%	0.0%	0
Leaves and Grass	0.8%	2.0%	7	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	0.0%	0.0%	0
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	0.0%	0.1%	0				
Disposable Diapers	0.0%	0.1%	0				
Animal Excrement/Litter	0.5%	1.2%	5	**Totals**	**100.0%**		**981**
Remainder/Composite Organic	0.0%	0.0%	0	Sample Count			4

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-19. Detailed Disposed Waste Composition Results: School Waste, Spring

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**17.6%**		**138**	**Wood Waste**	**0.0%**		**0**
Newspaper	0.1%	0.1%	0	Dimensional Lumber	0.0%	0.0%	0
Uncoated OCC/Kraft Paper	0.8%	0.7%	6	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	0.6%	0.6%	5	Engineered Wood	0.0%	0.0%	0
Low-grade Paper	3.6%	3.1%	28	Other Untreated Wood	0.0%	0.0%	0
Waxed OCC	0.0%	0.0%	0	Painted Wood	0.0%	0.0%	0
Pizza Boxes	0.2%	0.4%	2	Treated Wood	0.0%	0.0%	0
Compostable/Soiled Paper	6.0%	4.8%	47	Remainder/Composite Wood	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Paper	1.7%	2.1%	13				
Non-comp. Single-use Food Service Paper	1.2%	1.9%	9	**C&D Waste**	**36.7%**		**288**
Remainder/Composite Paper	3.4%	3.2%	27	Concrete	34.4%	44.6%	270
				Clean Drywall	0.0%	0.0%	0
Plastic	**7.4%**		**58**	Other Drywall	0.0%	0.0%	0
#1 PET Bottles	0.6%	0.7%	5	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.3%	0.4%	2	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.8%	1.0%	6	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.0%	0.1%	0	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.1%	0.2%	1	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.4%	0.7%	3	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.1%	0.1%	1	Soil, Rocks, and Sand	2.3%	2.9%	18
Clean Shopping/Dry Cleaning Bags	0.0%	0.1%	0	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.0%	0.0%	0	Remainder/Composite Construction	0.0%	0.0%	0
Other Film	4.2%	3.4%	33				
Durable Plastic Products	0.4%	0.5%	3	**E-Waste**	**0.0%**		**0**
Remainder/Composite Plastics	0.6%	0.6%	4	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**1.6%**		**12**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.5%	0.6%	4	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.3%	0.4%	2				
Brown Glass Containers	0.5%	0.7%	4	**Household Hazardous**	**0.0%**		**0**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.3%	0.5%	2	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**0.5%**		**4**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.1%	0.1%	1	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.1%	0.1%	1	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.0%	0	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.2%	0.3%	2	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	0.0%	0.1%	0	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	0.1%	0.1%	0	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**36.3%**		**285**	**Other Waste**	**0.0%**		**0**
Food Waste, Vegetative	11.6%	9.8%	91	Furniture	0.0%	0.0%	0
Other Food Waste	23.2%	18.3%	182	Tires	0.0%	0.0%	0
Leaves and Grass	0.4%	0.5%	3	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.1%	0.1%	0	Non-distinct Fines	0.0%	0.0%	0
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	0.6%	0.8%	4				
Disposable Diapers	0.3%	0.5%	2				
Animal Excrement/Litter	0.0%	0.0%	0	**Totals**	**100.0%**		**786**
Remainder/Composite Organic	0.2%	0.2%	1	Sample Count			5

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-20. Detailed Disposed Waste Composition Results: School Waste, Summer

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**3.3%**		**23**	**Wood Waste**	**2.2%**		**15**
Newspaper	0.0%	0.0%	0	Dimensional Lumber	0.9%	1.1%	6
Uncoated OCC/Kraft Paper	1.3%	1.6%	9	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	0.4%	0.9%	3	Engineered Wood	0.0%	0.0%	0
Low-grade Paper	0.6%	1.3%	4	Other Untreated Wood	0.0%	0.0%	0
Waxed OCC	0.0%	0.0%	0	Painted Wood	1.3%	1.7%	9
Pizza Boxes	0.0%	0.0%	0	Treated Wood	0.0%	0.0%	0
Compostable/Soiled Paper	0.3%	0.6%	2	Remainder/Composite Wood	0.1%	0.2%	1
Pot. Comp. Single-use Food Service Paper	0.0%	0.1%	0				
Non-comp. Single-use Food Service Paper	0.0%	0.0%	0	**C&D Waste**	**40.2%**		**282**
Remainder/Composite Paper	0.7%	1.5%	5	Concrete	0.0%	0.0%	0
				Clean Drywall	0.0%	0.0%	0
Plastic	**5.5%**		**39**	Other Drywall	0.0%	0.0%	0
#1 PET Bottles	0.0%	0.0%	0	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.1%	0.2%	1	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.0%	0.0%	0	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.0%	0.0%	0	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.0%	0.0%	0	Carpet	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	0	Soil, Rocks, and Sand	40.2%	55.7%	282
Clean Shopping/Dry Cleaning Bags	0.0%	0.1%	0	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.0%	0.0%	0	Remainder/Composite Construction	0.0%	0.0%	0
Other Film	0.1%	0.2%	1				
Durable Plastic Products	5.0%	6.7%	35	**E-Waste**	**0.0%**		**0**
Remainder/Composite Plastics	0.3%	0.7%	2	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**0.0%**		**0**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.0%	0.1%	0	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.0%	0.0%	0				
Brown Glass Containers	0.0%	0.0%	0	**Household Hazardous**	**0.0%**		**0**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.0%	0.0%	0	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**5.7%**		**40**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	0	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	0	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	5.6%	7.3%	39	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.0%	0.1%	0	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	0.1%	0.1%	0	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	0.0%	0.0%	0	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**31.4%**		**220**	**Other Waste**	**11.7%**		**82**
Food Waste, Vegetative	0.1%	0.2%	1	Furniture	11.6%	12.5%	81
Other Food Waste	0.0%	0.0%	0	Tires	0.0%	0.0%	0
Leaves and Grass	31.0%	40.7%	217	Mattresses	0.0%	0.0%	0
Prunings and Trimmings	0.0%	0.0%	0	Non-distinct Fines	0.2%	0.3%	1
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	0.1%	0.2%	0				
Disposable Diapers	0.2%	0.4%	1				
Animal Excrement/Litter	0.0%	0.0%	0	**Totals**	**100.0%**		**701**
Remainder/Composite Organic	0.1%	0.1%	0	Sample Count			4

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Detailed Self-haul (non-C&D) Disposed Waste Tables

Table D-21. Detailed Disposed Waste Composition Results: Overall Self-haul, Fall

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**13.0%**		**1,507**	**Wood Waste**	**10.9%**		**1,267**
Newspaper	0.6%	0.5%	75	Dimensional Lumber	3.0%	2.1%	349
Uncoated OCC/Kraft Paper	4.8%	3.7%	562	Pallets and Crates	0.0%	0.1%	5
High-grade Paper	0.3%	0.2%	33	Engineered Wood	2.6%	3.5%	304
Low-grade Paper	1.2%	0.8%	143	Other Untreated Wood	0.7%	0.7%	78
Waxed OCC	0.3%	0.5%	40	Painted Wood	2.7%	3.3%	310
Pizza Boxes	0.1%	0.1%	6	Treated Wood	0.6%	0.6%	66
Compostable/Soiled Paper	0.4%	0.3%	50	Remainder/Composite Wood	1.3%	1.7%	154
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	0				
Non-comp. Single-use Food Service Paper	0.1%	0.1%	9	**C&D Waste**	**9.0%**		**1,048**
Remainder/Composite Paper	5.1%	4.8%	591	Concrete	1.3%	1.7%	157
				Clean Drywall	0.0%	0.0%	0
Plastic	**8.2%**		**954**	Other Drywall	0.0%	0.0%	0
#1 PET Bottles	0.1%	0.1%	9	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.1%	0.1%	8	Asphalt Shingles	0.1%	0.1%	10
#1-#7 Other Containers	0.2%	0.2%	18	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.0%	0.0%	1	Insulation	0.3%	0.5%	36
Expanded Polystyrene Non-food Grade	0.0%	0.0%	3	Carpet	3.7%	5.5%	429
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	0.1%	0.3%	17
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	2	Soil, Rocks, and Sand	1.2%	2.1%	141
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	1	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.0%	0.0%	1	Remainder/Composite Construction	2.2%	2.2%	257
Other Film	1.3%	0.9%	146				
Durable Plastic Products	3.9%	3.7%	458	**E-Waste**	**0.2%**		**28**
Remainder/Composite Plastics	2.6%	2.5%	307	Televisions and CRTs	0.2%	0.3%	24
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**4.0%**		**461**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.1%	0.1%	12	Other Consumer Electronics	0.0%	0.0%	4
Green Glass Containers	0.0%	0.1%	4				
Brown Glass Containers	0.1%	0.1%	12	**Household Hazardous**	**0.0%**		**0**
Plate Glass	2.7%	3.2%	309	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	1.1%	1.1%	123	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**4.3%**		**497**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	1	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	0	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.0%	0.0%	2	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.0%	0.0%	1	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	3.7%	3.4%	434	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	0.5%	0.4%	59	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**20.8%**		**2,414**	**Other Waste**	**29.7%**		**3,457**
Food Waste, Vegetative	2.7%	2.5%	318	Furniture	17.9%	14.2%	2,082
Other Food Waste	0.6%	0.6%	70	Tires	0.0%	0.0%	0
Leaves and Grass	9.8%	7.9%	1,146	Mattresses	11.8%	15.3%	1,374
Prunings and Trimmings	2.0%	3.2%	231	Non-distinct Fines	0.0%	0.0%	0
Branches and Stumps	0.6%	1.0%	70				
Textiles and Clothing	4.4%	5.2%	508				
Disposable Diapers	0.0%	0.0%	2				
Animal Excrement/Litter	0.5%	0.5%	55	**Totals**	**100.0%**		**11,634**
Remainder/Composite Organic	0.1%	0.1%	16	Sample Count			43

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-22. Detailed Disposed Waste Composition Results: Overall Self-haul, Spring

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**6.3%**		**444**	**Wood Waste**	**38.0%**		**2,698**
Newspaper	0.3%	0.2%	21	Dimensional Lumber	12.4%	7.0%	879
Uncoated OCC/Kraft Paper	1.8%	1.6%	127	Pallets and Crates	0.0%	0.0%	0
High-grade Paper	0.3%	0.2%	20	Engineered Wood	8.5%	9.1%	604
Low-grade Paper	1.0%	0.6%	71	Other Untreated Wood	0.1%	0.1%	6
Waxed OCC	0.0%	0.0%	2	Painted Wood	9.4%	6.6%	664
Pizza Boxes	0.2%	0.1%	12	Treated Wood	5.2%	6.6%	367
Compostable/Soiled Paper	0.8%	0.5%	58	Remainder/Composite Wood	2.5%	2.8%	178
Pot. Comp. Single-use Food Service Paper	0.1%	0.1%	6				
Non-comp. Single-use Food Service Paper	0.1%	0.1%	8	**C&D Waste**	**8.8%**		**625**
Remainder/Composite Paper	1.7%	1.0%	118	Concrete	0.0%	0.0%	0
				Clean Drywall	1.3%	2.1%	89
Plastic	**1.6%**		**114**	Other Drywall	2.5%	3.0%	175
#1 PET Bottles	0.1%	0.1%	6	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.0%	0.0%	3	Asphalt Shingles	0.4%	0.7%	30
#1-#7 Other Containers	0.1%	0.0%	6	Other Asphalt Roofing	0.2%	0.3%	13
Expanded Polystyrene Food grade	0.0%	0.0%	2	Insulation	0.0%	0.0%	2
Expanded Polystyrene Non-food Grade	0.0%	0.1%	3	Carpet	2.1%	3.4%	150
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	2	Carpet Padding	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	1	Soil, Rocks, and Sand	1.1%	0.9%	76
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	1	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.0%	0.0%	1	Remainder/Composite Construction	1.3%	1.6%	92
Other Film	0.4%	0.2%	26				
Durable Plastic Products	0.7%	0.4%	50	**E-Waste**	**0.0%**		**0**
Remainder/Composite Plastics	0.2%	0.2%	14	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**2.1%**		**147**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.3%	0.4%	19	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.0%	0.0%	0				
Brown Glass Containers	0.3%	0.4%	19	**Household Hazardous**	**1.3%**		**94**
Plate Glass	0.9%	1.5%	62	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.7%	1.1%	47	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**8.0%**		**569**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.1%	0.0%	5	Dry-cell Batteries	0.5%	0.8%	38
Aluminum Foil/Containers	0.0%	0.0%	2	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.5%	0.4%	38	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.3%	0.3%	22	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.1%	0.1%	10	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	2.4%	3.9%	168	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.1%	0.2%	8
Other Ferrous	2.8%	3.0%	196	House Cleaners and Chemicals	0.7%	1.0%	48
Remainder/Composite Metal	1.8%	1.3%	128	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**23.8%**		**1,687**	**Other Waste**	**10.1%**		**716**
Food Waste, Vegetative	2.9%	2.7%	202	Furniture	5.4%	3.9%	385
Other Food Waste	1.4%	1.2%	103	Tires	0.0%	0.0%	0
Leaves and Grass	13.2%	8.5%	939	Mattresses	3.6%	2.9%	255
Prunings and Trimmings	4.2%	3.0%	299	Non-distinct Fines	1.1%	1.3%	76
Branches and Stumps	0.1%	0.2%	6				
Textiles and Clothing	1.0%	0.9%	71				
Disposable Diapers	0.4%	0.5%	29				
Animal Excrement/Litter	0.2%	0.3%	16	**Totals**	**100.0%**		**7,093**
Remainder/Composite Organic	0.3%	0.3%	21	Sample Count			45

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-23. Detailed Disposed Waste Composition Results: Overall Self-haul, Summer

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**5.7%**		**653**	**Wood Waste**	**14.9%**		**1,699**
Newspaper	0.7%	0.9%	83	Dimensional Lumber	8.0%	5.9%	906
Uncoated OCC/Kraft Paper	4.2%	6.2%	477	Pallets and Crates	1.5%	1.7%	172
High-grade Paper	0.0%	0.0%	0	Engineered Wood	0.2%	0.3%	20
Low-grade Paper	0.4%	0.6%	48	Other Untreated Wood	0.0%	0.0%	0
Waxed OCC	0.0%	0.0%	0	Painted Wood	0.4%	0.6%	46
Pizza Boxes	0.0%	0.0%	1	Treated Wood	0.7%	0.9%	78
Compostable/Soiled Paper	0.0%	0.0%	3	Remainder/Composite Wood	4.2%	4.4%	478
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	1				
Non-comp. Single-use Food Service Paper	0.0%	0.0%	1	**C&D Waste**	**14.2%**		**1,620**
Remainder/Composite Paper	0.3%	0.4%	39	Concrete	1.9%	2.4%	212
				Clean Drywall	0.0%	0.0%	0
Plastic	**3.2%**		**367**	Other Drywall	0.5%	0.9%	60
#1 PET Bottles	0.2%	0.2%	17	Asphalt Paving	0.0%	0.0%	2
#2 HDPE Bottles	0.0%	0.0%	3	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.0%	0.0%	2	Other Asphalt Roofing	0.0%	0.0%	0
Expanded Polystyrene Food grade	0.0%	0.0%	0	Insulation	0.0%	0.0%	0
Expanded Polystyrene Non-food Grade	0.0%	0.0%	0	Carpet	3.3%	2.9%	375
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	0.4%	0.7%	47
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	0	Soil, Rocks, and Sand	0.0%	0.0%	0
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	0	Ceramics and Brick	0.0%	0.0%	0
Other Clean PE Film	0.0%	0.0%	0	Remainder/Composite Construction	8.1%	11.4%	925
Other Film	0.1%	0.1%	15				
Durable Plastic Products	1.4%	1.1%	162	**E-Waste**	**3.1%**		**347**
Remainder/Composite Plastics	1.5%	1.7%	168	Televisions and CRTs	3.1%	5.0%	347
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**1.7%**		**195**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.0%	0.0%	3	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.0%	0.0%	2				
Brown Glass Containers	0.0%	0.0%	3	**Household Hazardous**	**0.0%**		**0**
Plate Glass	0.5%	0.6%	60	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	1.1%	1.8%	128	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**17.0%**		**1,935**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	4	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	0	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	3.3%	3.2%	372	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.1%	0.1%	8	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.3%	0.5%	34	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	2.4%	3.9%	269	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	3.6%	4.3%	411	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	7.4%	6.3%	837	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**29.8%**		**3,388**	**Other Waste**	**10.3%**		**1,172**
Food Waste, Vegetative	1.3%	1.6%	145	Furniture	7.2%	4.7%	814
Other Food Waste	0.0%	0.0%	0	Tires	0.0%	0.0%	0
Leaves and Grass	6.9%	6.5%	783	Mattresses	3.1%	2.7%	358
Prunings and Trimmings	16.6%	10.5%	1,884	Non-distinct Fines	0.0%	0.0%	0
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	3.9%	3.7%	446				
Disposable Diapers	0.5%	0.6%	57				
Animal Excrement/Litter	0.3%	0.5%	37	**Totals**	**100.0%**		**11,376**
Remainder/Composite Organic	0.3%	0.3%	35	Sample Count			43

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Detailed C&D Disposed Waste Tables

Table D-24. Detailed Disposed Waste Composition Results: Overall C&D, Fall

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**4.3%**		**274**	**Wood Waste**	**43.0%**		**2,760**
Newspaper	0.0%	0.0%	1	Dimensional Lumber	15.2%	8.2%	977
Uncoated OCC/Kraft Paper	2.6%	1.3%	165	Pallets and Crates	8.6%	8.7%	550
High-grade Paper	0.1%	0.1%	6	Engineered Wood	3.0%	2.0%	191
Low-grade Paper	0.4%	0.5%	26	Other Untreated Wood	0.1%	0.2%	7
Waxed OCC	0.0%	0.0%	0	Painted Wood	11.8%	6.8%	758
Pizza Boxes	0.0%	0.0%	0	Treated Wood	3.0%	2.9%	189
Compostable/Soiled Paper	0.4%	0.7%	27	Remainder/Composite Wood	1.4%	1.0%	88
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	0				
Non-comp. Single-use Food Service Paper	0.0%	0.0%	0	**C&D Waste**	**27.6%**		**1,773**
Remainder/Composite Paper	0.8%	0.6%	50	Concrete	3.6%	3.4%	233
				Clean Drywall	2.3%	3.4%	149
Plastic	**5.0%**		**323**	Other Drywall	3.8%	2.9%	245
#1 PET Bottles	0.0%	0.0%	2	Asphalt Paving	0.3%	0.5%	18
#2 HDPE Bottles	0.0%	0.0%	0	Asphalt Shingles	0.0%	0.0%	0
#1-#7 Other Containers	0.1%	0.1%	4	Other Asphalt Roofing	1.3%	2.1%	84
Expanded Polystyrene Food grade	0.0%	0.0%	0	Insulation	0.1%	0.1%	5
Expanded Polystyrene Non-food Grade	0.1%	0.1%	3	Carpet	6.0%	4.5%	386
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	2.1%	1.7%	135
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	0	Soil, Rocks, and Sand	3.2%	4.9%	205
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	1	Ceramics and Brick	1.2%	1.4%	76
Other Clean PE Film	0.2%	0.3%	12	Remainder/Composite Construction	3.7%	2.6%	237
Other Film	1.1%	0.8%	72				
Durable Plastic Products	1.0%	0.8%	63	**E-Waste**	**1.2%**		**75**
Remainder/Composite Plastics	2.6%	2.7%	165	Televisions and CRTs	1.1%	1.2%	68
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**3.5%**		**222**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.0%	0.0%	0	Other Consumer Electronics	0.1%	0.2%	7
Green Glass Containers	0.0%	0.0%	0				
Brown Glass Containers	0.0%	0.1%	3	**Household Hazardous**	**0.1%**		**4**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.1%	0.1%	4
Remainder/Composite Glass	3.4%	2.2%	219	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**9.7%**		**623**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	2	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	0	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.6%	0.8%	39	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.2%	0.4%	15	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.2%	0.3%	13	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	5.4%	6.3%	344	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	3.3%	1.8%	209	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**5.0%**		**324**	**Other Waste**	**0.6%**		**36**
Food Waste, Vegetative	0.1%	0.2%	7	Furniture	0.4%	0.5%	26
Other Food Waste	0.1%	0.2%	9	Tires	0.1%	0.1%	5
Leaves and Grass	0.8%	0.8%	49	Mattresses	0.1%	0.1%	6
Prunings and Trimmings	0.3%	0.4%	17	Non-distinct Fines	0.0%	0.0%	0
Branches and Stumps	0.0%	0.0%	0				
Textiles and Clothing	3.5%	5.4%	224				
Disposable Diapers	0.0%	0.0%	0				
Animal Excrement/Litter	0.0%	0.1%	3	**Totals**	**100.0%**		**6,413**
Remainder/Composite Organic	0.2%	0.3%	15	Sample Count			36

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-25. Detailed Disposed Waste Composition Results: Overall C&D, Spring

Material	Est. Percent	+ / -	Est. Tons	Material	Est. Percent	+ / -	Est. Tons
Paper	**1.6%**		**127**	**Wood Waste**	**40.8%**		**3,253**
Newspaper	0.0%	0.0%	0	Dimensional Lumber	9.7%	8.2%	774
Uncoated OCC/Kraft Paper	0.8%	1.1%	68	Pallets and Crates	12.2%	8.6%	974
High-grade Paper	0.0%	0.0%	1	Engineered Wood	9.6%	13.7%	762
Low-grade Paper	0.0%	0.0%	3	Other Untreated Wood	0.2%	0.2%	19
Waxed OCC	0.0%	0.0%	0	Painted Wood	5.8%	3.6%	459
Pizza Boxes	0.0%	0.0%	0	Treated Wood	3.1%	2.6%	244
Compostable/Soiled Paper	0.0%	0.0%	2	Remainder/Composite Wood	0.2%	0.2%	20
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	1				
Non-comp. Single-use Food Service Paper	0.0%	0.0%	0	**C&D Waste**	**46.1%**		**3,670**
Remainder/Composite Paper	0.7%	0.3%	54	Concrete	0.3%	0.4%	20
				Clean Drywall	0.1%	0.1%	6
Plastic	**3.5%**		**275**	Other Drywall	4.3%	2.8%	339
#1 PET Bottles	0.0%	0.0%	0	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.0%	0.0%	0	Asphalt Shingles	1.5%	1.8%	117
#1-#7 Other Containers	0.2%	0.2%	12	Other Asphalt Roofing	3.5%	5.3%	276
Expanded Polystyrene Food grade	0.0%	0.0%	0	Insulation	1.0%	1.8%	79
Expanded Polystyrene Non-food Grade	0.0%	0.0%	3	Carpet	3.6%	2.9%	287
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	0.5%	0.6%	41
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	0	Soil, Rocks, and Sand	2.9%	3.9%	230
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	0	Ceramics and Brick	2.5%	3.1%	199
Other Clean PE Film	0.1%	0.1%	4	Remainder/Composite Construction	26.1%	19.0%	2,075
Other Film	0.8%	1.3%	66				
Durable Plastic Products	1.7%	3.1%	137	**E-Waste**	**0.0%**		**0**
Remainder/Composite Plastics	0.7%	0.6%	53	Televisions and CRTs	0.0%	0.0%	0
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**1.1%**		**84**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.0%	0.0%	0	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.0%	0.0%	0				
Brown Glass Containers	0.0%	0.0%	0	**Household Hazardous**	**0.0%**		**1**
Plate Glass	0.5%	1.0%	43	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.5%	1.0%	41	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**1.3%**		**104**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	0	Dry-cell Batteries	0.0%	0.0%	1
Aluminum Foil/Containers	0.0%	0.0%	0	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.4%	0.4%	33	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.0%	0.0%	0	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.0%	0	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	0.6%	0.5%	51	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	0.2%	0.2%	19	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**3.6%**		**290**	**Other Waste**	**2.0%**		**159**
Food Waste, Vegetative	0.0%	0.0%	1	Furniture	0.2%	0.3%	15
Other Food Waste	0.0%	0.0%	0	Tires	0.0%	0.0%	1
Leaves and Grass	2.8%	4.7%	223	Mattresses	1.7%	3.0%	138
Prunings and Trimmings	0.6%	0.8%	49	Non-distinct Fines	0.1%	0.1%	5
Branches and Stumps	0.0%	0.0%	1				
Textiles and Clothing	0.2%	0.3%	14				
Disposable Diapers	0.0%	0.0%	0				
Animal Excrement/Litter	0.0%	0.0%	0	**Totals**	**100.0%**		**7,964**
Remainder/Composite Organic	0.0%	0.0%	3	Sample Count			35

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table D-26. Detailed Disposed Waste Composition Results: Overall C&D, Summer

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**1.1%**		**67**	**Wood Waste**	**44.3%**		**2,690**
Newspaper	0.0%	0.0%	0	Dimensional Lumber	21.9%	9.7%	1,332
Uncoated OCC/Kraft Paper	0.5%	0.3%	31	Pallets and Crates	0.4%	0.4%	25
High-grade Paper	0.0%	0.0%	0	Engineered Wood	1.9%	1.4%	116
Low-grade Paper	0.0%	0.0%	3	Other Untreated Wood	4.9%	7.1%	298
Waxed OCC	0.0%	0.0%	0	Painted Wood	7.4%	6.7%	448
Pizza Boxes	0.0%	0.0%	0	Treated Wood	5.6%	3.4%	342
Compostable/Soiled Paper	0.0%	0.0%	0	Remainder/Composite Wood	2.1%	1.3%	129
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	0				
Non-comp. Single-use Food Service Paper	0.0%	0.0%	0	**C&D Waste**	**47.0%**		**2,855**
Remainder/Composite Paper	0.5%	0.5%	32	Concrete	5.1%	4.1%	307
				Clean Drywall	1.9%	1.9%	118
Plastic	**1.4%**		**84**	Other Drywall	10.1%	5.4%	615
#1 PET Bottles	0.0%	0.0%	1	Asphalt Paving	0.0%	0.0%	0
#2 HDPE Bottles	0.0%	0.0%	1	Asphalt Shingles	3.1%	3.6%	187
#1-#7 Other Containers	0.0%	0.0%	0	Other Asphalt Roofing	7.7%	7.6%	469
Expanded Polystyrene Food grade	0.0%	0.1%	2	Insulation	0.3%	0.4%	16
Expanded Polystyrene Non-food Grade	0.8%	1.3%	51	Carpet	1.6%	1.4%	94
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0	Carpet Padding	0.2%	0.2%	9
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	0	Soil, Rocks, and Sand	6.5%	8.2%	392
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	0	Ceramics and Brick	5.4%	5.6%	328
Other Clean PE Film	0.0%	0.0%	0	Remainder/Composite Construction	5.3%	4.1%	320
Other Film	0.2%	0.2%	15				
Durable Plastic Products	0.1%	0.0%	4	**E-Waste**	**0.1%**		**5**
Remainder/Composite Plastics	0.2%	0.1%	9	Televisions and CRTs	0.1%	0.1%	5
				Computers and Flat Monitors	0.0%	0.0%	0
Glass	**0.7%**		**43**	Computer Peripherals	0.0%	0.0%	0
Clear Glass Containers	0.0%	0.0%	2	Other Consumer Electronics	0.0%	0.0%	0
Green Glass Containers	0.0%	0.0%	0				
Brown Glass Containers	0.0%	0.0%	0	**Household Hazardous**	**0.0%**		**0**
Plate Glass	0.0%	0.0%	0	Pesticides and Herbicides	0.0%	0.0%	0
Remainder/Composite Glass	0.7%	0.9%	41	Fluorescent Lighting	0.0%	0.0%	0
				Asbestos	0.0%	0.0%	0
Metal	**2.4%**		**143**	Paints, Solvents, and Adhesives	0.0%	0.0%	0
Aluminum Beverage Cans	0.0%	0.0%	0	Dry-cell Batteries	0.0%	0.0%	0
Aluminum Foil/Containers	0.0%	0.0%	0	Wet-cell Batteries	0.0%	0.0%	0
Other Non-ferrous	0.5%	0.6%	33	Gasoline/Kerosene	0.0%	0.0%	0
Tin Food Cans	0.0%	0.0%	0	Motor Oil	0.0%	0.0%	0
Empty Aerosol Cans	0.0%	0.0%	0	Vehicle and Equipment Fluids	0.0%	0.0%	0
Major Appliances	0.0%	0.1%	2	Medical Wastes	0.0%	0.0%	0
Oil filters	0.0%	0.0%	0	Pharmaceuticals	0.0%	0.0%	0
Other Ferrous	1.0%	0.9%	58	House Cleaners and Chemicals	0.0%	0.0%	0
Remainder/Composite Metal	0.8%	0.6%	50	Other Potentially Hazardous	0.0%	0.0%	0
Organics	**1.8%**		**112**	**Other Waste**	**1.2%**		**73**
Food Waste, Vegetative	0.0%	0.0%	0	Furniture	0.6%	0.6%	37
Other Food Waste	0.0%	0.0%	0	Tires	0.0%	0.0%	0
Leaves and Grass	1.2%	1.2%	71	Mattresses	0.4%	0.4%	25
Prunings and Trimmings	0.4%	0.4%	24	Non-distinct Fines	0.2%	0.2%	10
Branches and Stumps	0.2%	0.3%	11				
Textiles and Clothing	0.1%	0.1%	5				
Disposable Diapers	0.0%	0.0%	0	**Totals**	**100.0%**		**6,071**
Animal Excrement/Litter	0.0%	0.0%	0	Sample Count			53
Remainder/Composite Organic	0.0%	0.0%	2				

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Detailed Single-family Residential Curbside Organics Tables

Table D-27. Detailed Organics Composition Results: Single-family, Fall

Material	Est. Percent	+ / -	Est. Tons
Organics	**98.9%**		**8,221**
Food Waste, Vegetative	1.5%	0.9%	122
Other Food Waste	0.9%	0.9%	76
Leaves, Grass, Prunings and Trimmings	96.4%	1.9%	8,020
Branches and Stumps	0.1%	0.1%	4
Other Compostables	**0.2%**		**14**
Waxed Corrugated Cardboard	0.0%	0.0%	0
Pizza Boxes	0.0%	0.0%	0
Compostable Paper	0.1%	0.1%	6
Newspaper	0.0%	0.1%	4
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	3
Other Compostable Organics	0.0%	0.0%	1
Other Compostables	**1.0%**		**81**
Uncoated Corrugated Cardboard/Kraft Paper	0.0%	0.0%	0
Mixed Recyclable Paper	0.0%	0.0%	3
Recyclable Polycoated Paper	0.0%	0.0%	0
Non-comp. Single-use Food Service Paper	0.0%	0.0%	0
Recyclable Plastic	0.0%	0.0%	2
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	0
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	0
Other Non-compostable Film	0.0%	0.0%	3
Recyclable Glass	0.1%	0.1%	10
Recyclable Metal	0.0%	0.0%	1
Animal Excrement And Litter	0.2%	0.4%	20
Other Materials	0.5%	0.7%	41
Totals	**100.0%**		**8,317**
Sample Count			60

Confidence intervals calculated at the 90% confidence level.

Percentages for material types may not total 100% due to rounding.

Table D-28. Detailed Residential Organics Composition Results: Single-family, Spring

Material	Est. Percent	+ / -	Est. Tons
Organics	**98.5%**		**7,529**
Food Waste, Vegetative	2.0%	1.0%	154
Other Food Waste	0.8%	0.5%	64
Leaves, Grass, Prunings and Trimmings	94.0%	3.0%	7,184
Branches and Stumps	1.7%	2.6%	127
Other Compostables	**0.3%**		**26**
Waxed Corrugated Cardboard	0.0%	0.0%	0
Pizza Boxes	0.1%	0.2%	10
Compostable Paper	0.0%	0.0%	3
Newspaper	0.1%	0.1%	7
Pot. Comp. Single-use Food Service Paper	0.1%	0.1%	4
Pot. Comp. Single-use Food Service Plastic	0.0%	0.0%	0
Other Compostable Organics	0.0%	0.0%	2
Other Compostables	**1.2%**		**90**
Uncoated Corrugated Cardboard/Kraft Paper	0.0%	0.0%	2
Mixed Recyclable Paper	0.0%	0.0%	1
Recyclable Polycoated Paper	0.0%	0.0%	0
Non-comp. Single-use Food Service Paper	0.0%	0.0%	2
Recyclable Plastic	0.0%	0.0%	2
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	0
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	0
Other Non-compostable Film	0.0%	0.0%	1
Recyclable Glass	0.0%	0.0%	0
Recyclable Metal	0.0%	0.0%	1
Animal Excrement And Litter	0.5%	0.6%	41
Other Materials	0.5%	0.6%	41
Totals	**100.0%**		**7,645**
Sample Count			60

Confidence intervals calculated at the 90% confidence level.

Percentages for material types may not total 100% due to rounding.

Table D-29. Detailed Residential Organics Composition Results: Single-family, Summer

Material	Est. Percent	+ / -	Est. Tons
Organics	**92.7%**		**9,348**
Food Waste, Vegetative	6.9%	4.5%	692
Other Food Waste	1.0%	0.7%	98
Leaves, Grass, Prunings and Trimmings	84.8%	10.1%	8,548
Branches and Stumps	0.1%	0.2%	10
Other Compostables	**0.4%**		**43**
Waxed Corrugated Cardboard	0.0%	0.0%	0
Pizza Boxes	0.0%	0.0%	2
Compostable Paper	0.1%	0.1%	5
Newspaper	0.2%	0.2%	18
Pot. Comp. Single-use Food Service Paper	0.0%	0.0%	0
Pot. Comp. Single-use Food Service Plastic	0.0%	0.1%	4
Other Compostable Organics	0.1%	0.1%	14
Other Compostables	**6.9%**		**693**
Uncoated Corrugated Cardboard/Kraft Paper	0.0%	0.0%	0
Mixed Recyclable Paper	0.0%	0.0%	2
Recyclable Polycoated Paper	0.0%	0.0%	0
Non-comp. Single-use Food Service Paper	0.0%	0.0%	0
Recyclable Plastic	0.0%	0.0%	0
Non-comp. Single-use Food Service Plastic	0.0%	0.0%	0
Clean Shopping/Dry Cleaning Bags	0.0%	0.0%	0
Other Non-compostable Film	0.0%	0.0%	4
Recyclable Glass	0.0%	0.0%	0
Recyclable Metal	0.0%	0.0%	1
Animal Excrement And Litter	0.0%	0.0%	2
Other Materials	6.8%	9.6%	683
Totals	**100.0%**		**10,084**
Sample Count			60

Confidence intervals calculated at the 90% confidence level.

Percentages for material types may not total 100% due to rounding.

Appendix E: Analysis of Results among Single-family Collection Districts

The City of Tacoma is interested in knowing if single-family composition of recyclable materials in disposed waste varies across the city's five waste and recycling service areas. To determine if differences exist, Cascadia conducted an analysis of the proportion of recyclable materials in the disposed waste streams in each of the city's five single-family service areas. This appendix describes the **methods** Cascadia used to conduct this analysis, and **results** of the analysis.

Methods

This section describes the methods Cascadia used to prepare and analyze the single-family sample data.

Sample Data Preparation

In preparation for the analysis, Cascadia categorized the 59 single-family samples sorted for this study according to the day of the week they were collected. A sample collected on Monday was considered from Service Area 1, and a sample collected on Tuesday was categorized as Service Area 2.

For each sample, weights for the material types that are recyclable in Tacoma's current curbside program were grouped according to the recyclable categories **paper**, **plastic**, **glass**, and **metal**. The recyclable categories and associated material types are presented in **Table E-1**. All material types not listed in the table were included in the category "other."

Table E-1. Material Types by Recyclable Category

Recyclable Category/Material Type	Recyclable Category/Material Type
Recyclable Paper	**Recyclable Glass**
Newspaper	Clear Glass Containers
OCC/Kraft Paper	Green Glass Containers
High Grade Paper	Brown Glass Containers
Low-grade Paper	**Recyclable Metal**
Recyclable Plastic	Aluminum Beverage Cans
#1 PET Bottles	Aluminum Foil/Containers
#2 HDPE Bottles	Tin Food Cans
#1-#7 Other Containers	Empty Aerosol Cans
Clean Shopping/Dry Cleaning Bags	

Calculations

The analysis consisted of three steps:

1. Descriptive statistics of sampling data.
2. Composition estimates were calculated for each recyclable category for each service area.
3. Pair-wise t-tests were conducted for each recyclable category across all five service areas.

Descriptive Statistics of Sampling Data

1. Analyze the sampling data across the five service areas using common descriptive statistics. This analysis included count of samples (n), the range (minimum and maximum), central tendencies (mean and median), and measure of dispersion of data (variance).

Composition Estimates

The individual **composition estimates** for each material category within each service area were obtained using the ratio estimator method applied to the grouped data. The ratio estimate (r_j) was calculated by summing the weight of the particular material category across all samples in the service area and dividing by the total weight of all samples in the service area, according to the formula:

$$ r_j = \frac{\sum_i c_{ij}}{\sum_i w_i} $$

where:

- §   **c** = weight of a particular material
- §   **w** = sum of all material weights
- §   for **i** =1 to n where n = number of selected samples
- §   for **j** = 1 to m where m = number of material categories

The **variance** of the ratio estimator was approximated according to the formula:

$$ \mathrm{Var}\left(r_j\right) \approx \left(\frac{1}{n}\right)\left(\frac{1}{\overline{w}^2}\right)\left(\frac{\sum_i \left(c_{ij} - r_j w_i\right)^2}{n-1}\right) $$

where:

- § $\overline{w} = \dfrac{\sum_i w_i}{n}$.
- §   **n** = number of selected samples

§ **i** and **j** are as previously defined.

Lower and upper limits for **90% confidence intervals** were found according to the formula:

$$r_j \pm \left(t^* \sqrt{\mathrm{Var}(r_j)} \right)$$

where:

§ $t^* = t_{0.10(2), n-1}$ is a two-tailed critical value from the Student's t distribution.

The sample sizes are fairly small relative to the total population of collection days. Therefore, the t distribution was used instead of the standard normal, or z distribution, because the sample sizes are fairly small. The degrees of freedom used for each service area varied slightly due to minor differences in the total number of samples for each service area. The finite population correction (FPC) factor was excluded from the variance formula because the FPC factor has virtually no effect on the variance estimate given small sample size.

Pair-wise t-tests

For a given material category, pair-wise t-tests were conducted for the composition estimates across service areas. This resulted in 10 pair-wise tests per material category. Each pair-wise test examined the following null hypothesis (H$_0$) that:

§ the true composition estimates of a particular material category are the same for each of two service areas ($p_{jd_a} - p_{jd_b} = 0$).

against the alternative hypothesis (H$_A$) that,

§ the true composition estimates of a particular material category are different for each of two service areas ($p_{jd_a} - p_{jd_b} \neq 0$).

In the statistical hypotheses, p_j represents the *true* composition estimates; composition estimates are *estimated* from sample data as r_j. The t-statistic was constructed using the formula:

$$t = \frac{\left(r_{j,d_a} - r_{j,d_b} \right) - 0}{\sqrt{\dfrac{\mathrm{Var}\left(r_{j,d_a} \right)}{n_{d_a}} + \dfrac{\mathrm{Var}\left(r_{j,d_b} \right)}{n_{d_b}}}}$$

where:

§ r_{j,d_a} = the composition estimate for material category j and service area d_a

§ $\mathrm{Var}(r_{j,d_a})$ = variance of the composition estimate for material category j and service area d_a

§ n_{d_a} = total sample weight for service area d_a

Since multiple tests were conducted using the same data, the significance level (α) of 0.01 was adjusted to α = 0.001 using a Bonferroni correction to maintain an α ≈ 10% within each set of 10 comparisons (α/10). Then the null hypothesis of the two-tailed test can be rejected if $t \leq - t\alpha/2$ or $t \geq t\alpha/2$, where $t\alpha/2$

is the 100(1 − α) percentile of the standard normal distribution. For α=0.001, $\pm$ *tα/2* equals $\pm$ 3.29. Hence, the null hypothesis can be rejected if *t* ≥ 3.29 or if *t* ≤ -3.29 and the pair-wise comparison can be considered to be "statistically significant."

For example, if the t-statistic was calculated to be -25.96, it does not lie between the critical values -3.29 and 3.29. Hence, at 0.001 significance level, we can *reject* the null hypothesis that the true composition estimates of a particular material category are the same for each of two service areas. On the other hand, if the t-statistic was calculated to be 0.89, it lies between the critical values -3.29 and 3.29. Hence, at 0.001 significance level, we do *not* reject the null hypothesis.

Results and Conclusions

Descriptive Statistics

Figure E-1 shows the boxplots developed based on the sample composition data for the four recyclable material categories across the five service areas, expressed as actual weights (in pounds). The boxplots show the median, the minimum, the maximum, the first and the third quartiles, and potential outliers in the data.

Figure E-1. Boxplots of the Sample Composition Data across Service Areas by Material Category (in pounds)
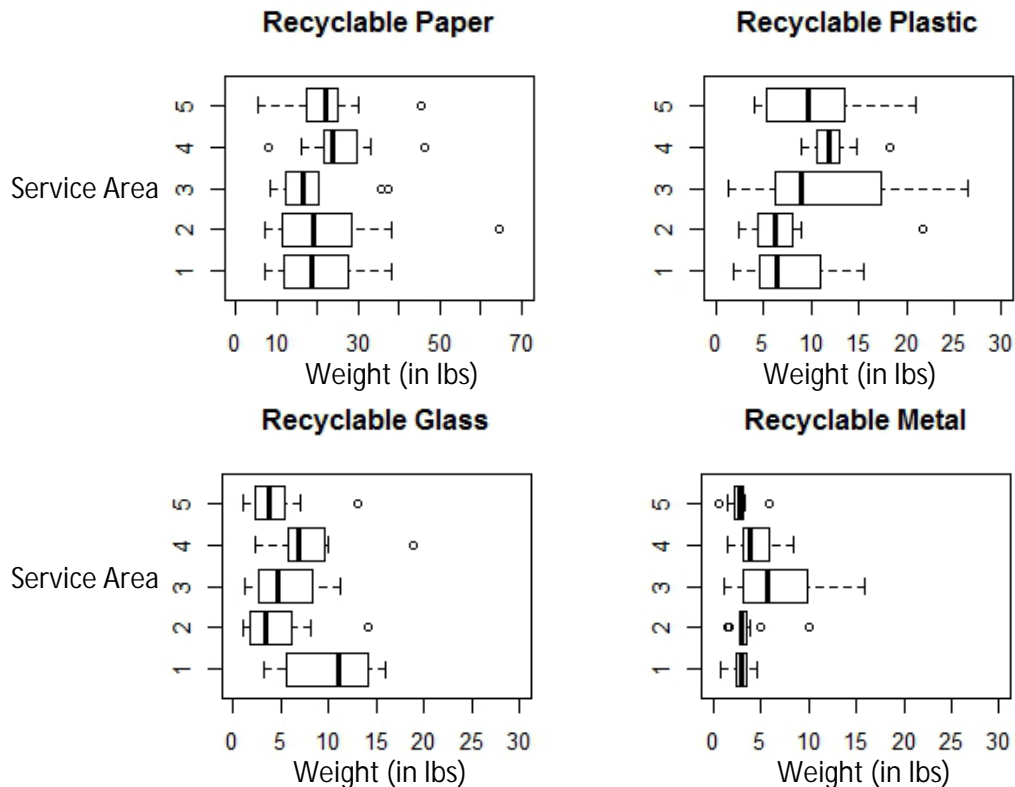
A visual inspection of the boxplots suggests that the median values across the five service areas are noticeably dispersed, except for the recyclable paper material category, where the median values are

more visually similar. The quartile ranges, as indicated by the length of the boxes either to the right and the left of the median value, suggest that there is noticeable variation across the five service areas for all material categories, and that the quartile ranges often overlap among service areas. There are outlier values in all service areas except for Service Area 1; these outliers are typically singular values extended beyond the upper quartiles of the boxplots.

Table E-2 below summarizes the sampling data across the five service areas using common descriptive statistics – count of samples (n), the range (minimum and maximum), central tendencies (mean and median), and measure of dispersion of data (variance) – for all four of the recyclable material categories as well as for the "Other" category, which represents the non-recyclable fraction of the sample.

Table E-2. Descriptive Statistics on the Sampling Data (in pounds)

Service Area 1 (n=12)		Total	Paper	Plastic	Glass	Metal	Other
	mean	249.87	20.35	7.55	10.12	2.92	208.93
	SD	23.83	10.24	4.31	4.58	1.04	19.95
	median	245.85	18.35	6.45	11.10	2.95	202.10
	min	221.10	7.00	1.90	3.20	0.70	182.90
	max	306.00	38.00	15.50	16.00	4.50	249.10

Service Area 2 (n=12)		Total	Paper	Plastic	Glass	Metal	Other
	mean	231.43	22.94	7.20	4.48	3.56	193.24
	SD	13.27	15.95	5.00	3.86	2.21	18.58
	median	230.55	18.95	6.20	3.35	3.00	192.50
	min	209.80	7.20	2.40	1.00	1.50	164.80
	max	259.10	64.60	21.80	14.20	10.00	221.90

Service Area 3 (n=12)		Total	Paper	Plastic	Glass	Metal	Other
	mean	249.36	18.46	11.78	5.44	6.71	206.98
	SD	19.51	9.14	7.92	3.53	4.68	9.58
	median	253.26	16.5	8.95	4.65	5.65	205.95
	min	220.90	8.40	1.30	1.20	1.10	193.40
	max	291.20	37.20	26.40	11.30	15.90	229.40

Service Area 4 (n=12)		Total	Paper	Plastic	Glass	Metal	Other
	mean	243.64	25.28	12.15	8.02	4.55	193.63
	SD	29.93	9.13	2.54	4.02	2.13	31.25
	median	232.10	23.50	11.90	6.80	3.80	183.80
	min	211.40	8.10	9.00	2.30	1.40	159.30
	max	328.10	46.20	18.30	18.90	8.40	279.10

Service Area 5 (n=12)		Total	Paper	Plastic	Glass	Metal	Other
	mean	240.81	21.59	10.03	4.41	2.73	202.06
	SD	27.70	10.43	5.08	3.27	1.26	30.75
	median	236.01	21.75	9.75	3.75	2.80	195.01
	min	209.70	5.30	4.00	1.00	0.50	171.30
	max	310.90	45.50	21.00	13.00	5.80	279.40

The descriptive statistics show that:

1. The number of samples for each service area is 12, except in Service Area 3 where n=13.
2. The total sample weight ranges from 200 to 300 pounds, with some samples exceeding 300 pounds but no sample weighing less than 210 pounds.
3. The "Other" material category, which represents non-recyclable materials, represents a major share of the total sample weight in all service areas. "Other" materials weighed about 200 pounds per sample.
4. The recyclable paper is the heaviest of the recyclable material category in all five service areas. The means and the medians for recyclable paper are more or less comparable in all service areas, with broad overlap in the standard deviations. However, some fraction weights far exceed the typical weight range, as indicated by the recyclable paper maxima for Service Area 2 (64.60 pounds), Service Area 4 (46.20 pounds), and Service Area 5 (45.50 pounds).
5. The recyclable plastic material category is the second-heaviest recyclable material category across the five service areas.
6. The recyclable glass and the recyclable metal material categories interchangeably represent the smallest fraction among the recyclable material categories. The mean and the median fraction weights typically range from around 3 to 8 lbs, with the singular exception of recyclable glass in Service Area 1 (mean=10.12 lbs, median=11.10 lbs).

Composition Estimates

The composition estimates (Est.), lower limit of the 90% confidence interval (LL), and upper limit of the 90% confidence interval (UL) for each material category considered in this analysis are presented in **Table E-3** by service area.

Table E-3. Composition Estimates with Confidence Intervals, by Service Area (in percent)

		Service Area 1	Service Area 2	Service Area 3	Service Area 4	Service Area 5
Recyclable Paper	LL	6.4	6.7	5.8	8.5	7.0
	Est.	8.1	9.9	7.4	10.4	9.0
	UL	9.9	13.1	9.0	12.3	10.9
Recyclable Plastic	LL	2.1	2.1	3.3	4.5	3.0
	Est.	3.0	3.1	4.7	5.0	4.2
	UL	3.9	4.1	6.2	5.5	5.3

		Service Area 1	Service Area 2	Service Area 3	Service Area 4	Service Area 5
Recyclable Glass	LL	3.2	1.2	1.5	2.5	1.1
	Est.	**4.0**	**1.9**	**2.2**	**3.3**	**1.8**
	UL	4.9	2.7	2.8	4.1	2.5
Recyclable Metal	LL	1.0	1.1	1.9	1.5	1.00
	Est.	**1.2**	**1.5**	**2.7**	**1.9**	**1.1**
	UL	1.4	2.0	3.5	2.2	1.4
Other	LL	82.1	80.0	80.6	77.3	81.5
	Est.	**83.6**	**83.5**	**83.0**	**79.5**	**83.9**
	UL	85.1	87.1	05.3	81.7	86.3

Figure E-2 presents the estimated proportions for each material category, by service area. For clarity purposes, this figure does not include confidence interval ranges.

Figure E-2. Recyclable Category Composition Estimates by Service Area (As Percentages)
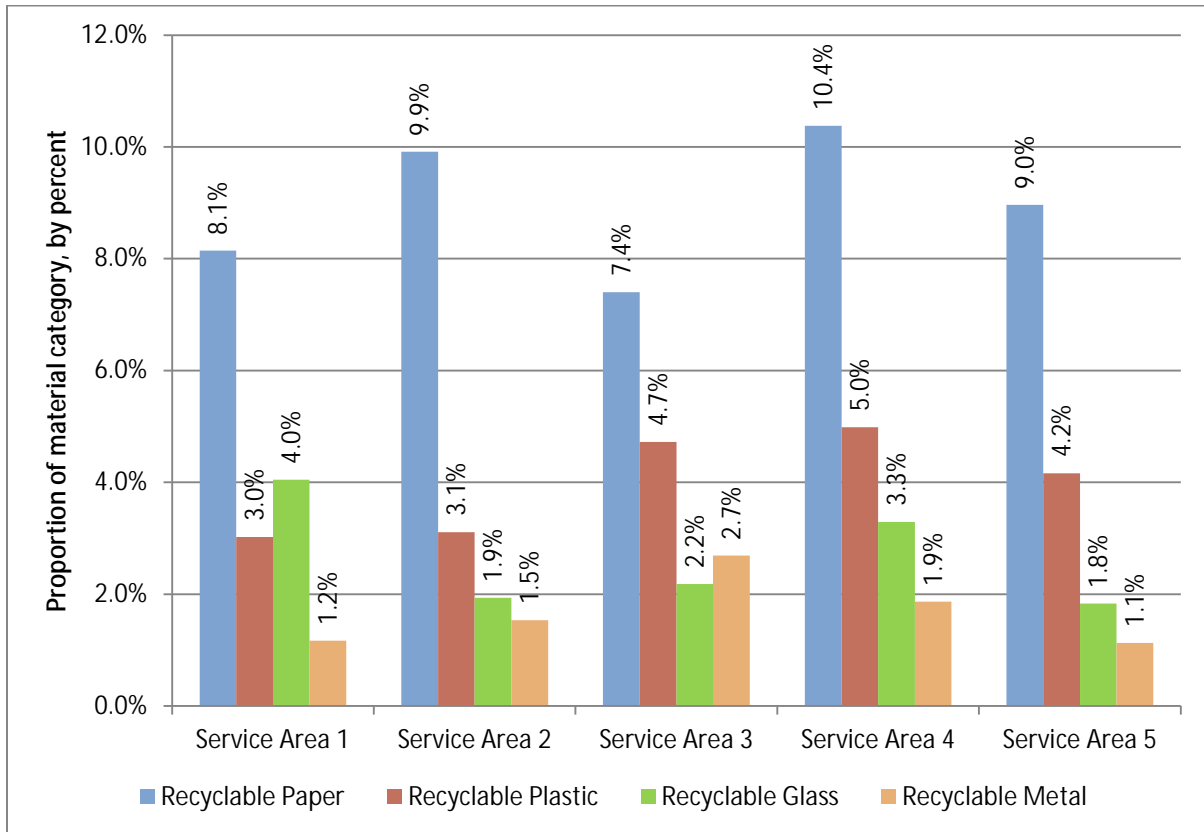
Table E-3 and **Figure E-2** show that:

1. The "Other" material category, which represents all non-recyclable materials in the samples, makes up between 80% and 84% of the total sample weight in all service areas.

2. In other words, the recyclable portion of the disposed waste samples was around 16% to 20% in the samples analyzed across the five service area.

3. The composition percentages for the recyclable categories appear similar across the five service areas.

4. Recyclable paper is the largest recyclable material category in all five service areas, followed by recyclable plastic (except in service area 1), then by recyclable glass, and finally by recyclable metals.

Figure E-3a-d presents the percent composition estimates and their corresponding confidence intervals for each individual recyclable material category, by service area. A visual comparison of the position of the percent composition estimates and the confidence interval bar overlaps indicates the likelihood of statistically significant differences between service area results. Typically, the greater the overlap between the confidence interval bars, the less likely there is to be a significant difference, even though the composition estimates may be placed at different heights on the plot.

Figure E-3. Composition Estimates (As Percentages) with Confidence Intervals, by Service Area

(a) Recyclable Paper

(b) Recyclable Plastic
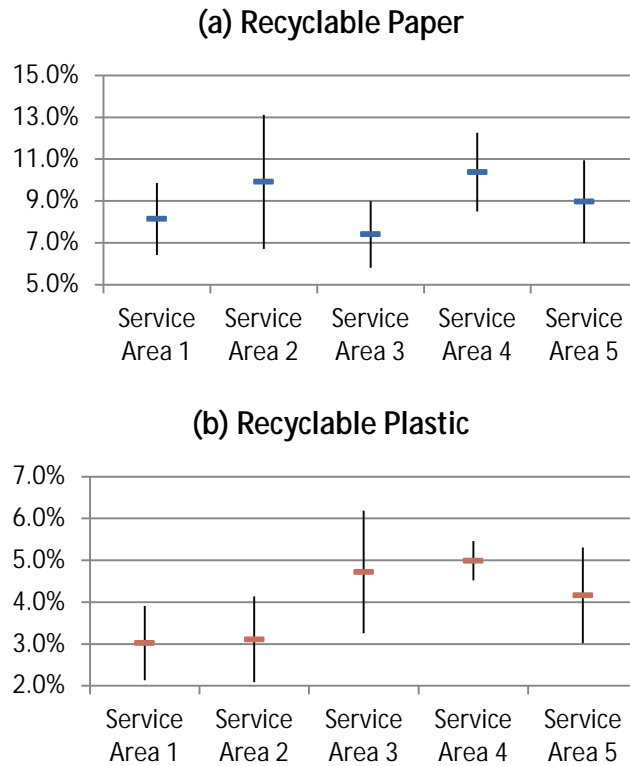
(c) Recyclable Glass
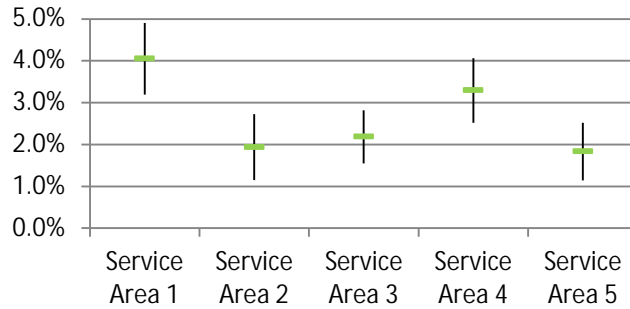
(d) Recyclable Metal
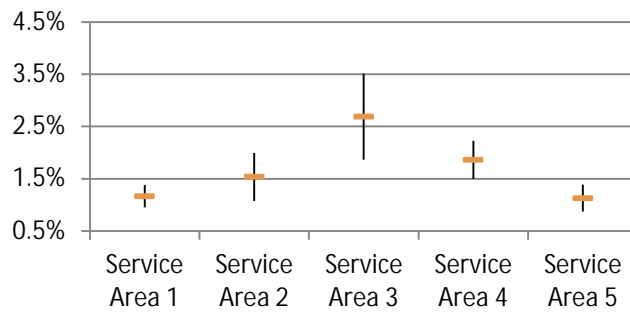
The visual inspection suggests:

§ For recyclable paper: there are no instances of confidence intervals that do not overlap.

§ For recyclable plastic: Service Area 4 can be distinguished from Service Areas 1 and 2.

§ For recyclable glass: Service Area 1 can be distinguished from Service Areas 2, 3 and 4.

§ For recyclable metal: Service Area 3 can be distinguished from Service Areas 1, 5 and possibly from Service Area 2 as well.

Detecting Significant Differences

As mentioned above, Cascadia also used pair-wise t-tests for two population proportions for each recyclable material category to detect significant differences in the composition estimates and their corresponding confidence intervals among the five service areas. The pair-wise t-test was performed for a total of forty service area pairs, ten per recyclable material category (**Table E-4**).

Table E-4. t-statistic for Service Area Pairs, by Recyclable Materials Category

	(1,2)	(1,3)	(1,4)	(1,5)	(2,3)	(2,4)	(2,5)	(3,4)	(3,5)	(4,5)
Paper	-0.68	0.31	-0.86	-0.33	0.98	-0.17	0.35	-1.16	-0.63	0.53
Plastic	-0.06	-0.98	-1.12	-0.68	-0.91	-1.03	-0.61	-0.14	0.30	0.43

Glass	1.35	1.20	0.45	1.45	-0.19	-0.92	0.09	-0.76	0.28	1.02
Metal	-0.35	-1.24	-0.64	0.04	-0.87	-0.28	0.38	0.61	1.26	0.66

As mentioned earlier, the value of t-statistic should be between the critical values -3.29 and 3.29 for the test to be called statistically significant. The value of t-statistic was between the critical values -3.29 and 3.29 ($\pm t\alpha/2$ at $\alpha = 0.001$), for all service area pairs. Hence, the null hypothesis – the true composition estimates of a particular material category are the same for each of two service areas – could not be rejected for any sample pairs for any recyclable material category.

A possible reason for failing to reject the null hypothesis could be to have a very stringent cutoff criterion or the critical value. The pair-wise t-test was repeated for $\alpha = 0.01$ ($\pm t\alpha/2 = \pm 2.57$), 0.05 ($\pm t\alpha/2 = \pm 1.96$), and 0.1 ($\pm t\alpha/2 = \pm 1.645$). Thus, increasing the critical value by two order of magnitudes does not change the results obtained from the original t-test.

The t-tests used assume independent samples and normality of the ratio estimator. Therefore, non-independent samples may affect the result of the t-test. The composition vector for a given service area sum to one because of the cumulative addition of the material fractions. This built-in dependence in the proportions means that a change in one material category automatically means a change in another material category within a given service area. However, this dependence is more likely to affect a multi-variate analysis where the composite differences among several material categories across the service areas are compared. In this case, the assumption of independent samples is met because the samples collected do not affect each other and also because the pair-wise t-test compares service areas with respect to proportions derived from these independent samples.

A couple of qualifications should be considered when reviewing the estimated proportions, the calculated confidence interval limits, and the pair-wise comparisons:

1. The t-tests used assume normality of the composition estimates. The assumption of normality, though, may not be reasonable. The Shapiro-Wilk test for univariate normality was used to test the null hypothesis that the composition estimates for a given material category follow normal distribution. Table E-5 shows the results of the normality test, with the test statistic W and the corresponding P-value.

Table E-5. Test for Univariate Normality (Shapiro-Wilk normality test)

	W	P
Paper	0.92	0.00
Plastic	0.94	0.00
Glass	0.92	0.00
Metal	0.77	0.00

Since p<0.05, then we can reject the null hypothesis for all component categories normal.

2. The t-test used assume homogeneity of variance of the composition estimates. The boxplots and the confidence intervals mentioned above indicate that there is noticeable overlap between the quartile ranges or the confidence intervals of many service areas, although the central value, either the median or the ratio estimate, may be located distinctly. The Flinger-Killeen test for homogeneity of univariate variance was used to test the null hypothesis that the variances of the composition estimates for a given material category across the five service areas are equal. This test is robust against departures from normality. Table E-6 shows the results of the variance test, with the test statistic "Chi-sq" and the corresponding P-value.

Table E-6. Test for Univariate Homogeneity of Variance (Flinger-Killen test)

	Chi-sq	P
Paper	0.87	0.93
Plastic	9.47	0.05
Glass	4.82	0.31
Metal	14.46	0.01

The test for homogeneity of variance indicate that the null hypothesis can be rejected only for the recyclable metal category, and possibly for the recyclable plastic category. Since p-value > .05 for the recyclable paper and glass material categories, we cannot reject the null hypothesis that the variances for the service areas are equal.

Given the failure to meet the normality assumption, an alternative approach was adopted for assessing statistically significant differences in the composition estimates among the five service areas. This alternative approach was a non-parametric, 2-sample chi-squared test for testing the null hypothesis that the composition estimates from two service areas for a given recyclable material category are equal. The null hypothesis was rejected if the P-value associated with the test statistic, X-squared, is less than a significance level of 0.05.

Table E-7 shows the X-squared statistic, while **Table E-8** shows the corresponding P-values for the non-parametric (chi-squared) method for service area pairs, by recyclable materials category.

Table E-7. X-squared Statistic for the Non-Parametric (chi-squared) Method for Service Area Pairs, by Recyclable Materials Category

	(1,2)	(1,3)	(1,4)	(1,5)	(2,3)	(2,4)	(2,5)	(3,4)	(3,5)	(4,5)
Paper	0.27	0.02	0.49	0.03	0.67	0.00	0.04	1.00	0.22	0.14
Plastic	0.00	0.57	0.78	0.19	0.45	0.64	0.13	0.00	0.01	0.05
Glass	1.17	0.89	0.04	1.40	0.00	0.40	0.00	0.23	0.00	0.53
Metal	0.00	0.83	0.07	0.00	0.31	0.00	0.00	0.10	0.86	0.08

Table E-8. P-values corresponding the Non-Parametric (chi-squared) Method for Service Area Pairs, by Recyclable Materials Category

	(1,2)	(1,3)	(1,4)	(1,5)	(2,3)	(2,4)	(2,5)	(3,4)	(3,5)	(4,5)
Paper	0.60	0.89	0.48	0.87	0.41	0.99	0.85	0.32	0.64	0.71
Plastic	1.00	0.45	0.38	0.66	0.50	0.42	0.72	1.00	0.94	0.83
Glass	0.28	0.35	0.84	0.24	1.00	0.52	1.00	0.63	1.00	0.47
Metal	1.00	0.36	0.79	1.00	0.58	1.00	1.00	0.76	0.35	0.77

The non-parametric X-squared test for population proportions was performed for a total of forty service area pairs, ten per recyclable material category. As mentioned earlier, the P-value should be less than 0.05 (P-value at $\alpha = 0.05$) for the test to be called statistically significant.

The P-value of t-statistic was greater than 0.05 for all service area pairs. Hence, the null hypothesis that the proportions (composition estimates) from two service areas for a given recyclable material category are equal could not be rejected for any sample pairs for any recyclable material category.

Summary

Appendix E describes the **methods** and **results** of the analysis that was conducted to decide if single-family composition varies across the City of Tacoma's five waste and recycling service areas. The various analyses used to determine if differences existed were divided into three broad categories.

1. The descriptive statistics summarized the sampling data using commonly used descriptive statistics such as the count of samples (n), the range (minimum and maximum), central tendencies (mean and median), and the measure of dispersion of data (variance).

2. These descriptive statistics were used to derive the composition estimates for each individual recyclable material category across the five service areas using the ratio estimator approach. Additionally, the upper and lower bounds on the composition estimate were calculated.

3. The ratio estimates were then used for pair-wise t-tests that compared different pairs of service areas with respect to the recyclable materials category, one category at a time.

The resulting data were visualized to facilitate qualitative, visual interpretation of the sampled data or of the results of the analysis.

The results of the analyses can be summarized as follows:

1. About a one-fifth of the total material in the samples were made up of materials from the four recyclable material categories – paper, plastic, glass, and metal – across the five service areas. Recyclable paper was largest recyclable material category by proportion in the samples, followed by plastic, glass, and/or metal. This pattern was consistent across the five service areas.

2. Qualitative and visual inspection of the data suggest a noticeable variation in the proportion of the material categories among the different samples within a given service area as well as among the five service areas. The dispersed sample proportions overlapped more or less with

other dispersed sample proportions making the distinction among different service areas less apparent in any given material category.

3. The composition estimates were derived from the actual sample weights of different material categories using the ratio estimator approach; the corresponding variance and the upper and the lower bounds were also calculated. These composition estimates follow a similar narrative to that established by the actual sample weights. Visual inspection of these composition estimates show slight variation in the composition estimates among the five service areas, but no service areas are particularly distinguishable. The confidence intervals often have overlapping extents making the distinction, if any, even less clear.

4. A battery of statistical analyses were employed to detect differences among the five service areas.

5. The conventional t-test indicated that the null hypothesis – the true composition estimates of a particular material category are the same for each of two service areas – could not be rejected for any sample pairs for any recyclable material category. The result held true even after relaxing the rigorous cut-off criterion.

6. Diagnostic statistical tests suggested that although the data subjected to the pair-wise t-test was independent, they did not meet the assumption of normality and homogeneity of variance. Hence, the pair-wise test was repeated using a non-parametric, chi-squared test for testing the null hypothesis that the composition estimates from two service areas for a given recyclable material category are equal. **The test suggested that the null hypothesis could not be rejected for any pair of service areas.**

7. Overall, it can be concluded that the five service areas could not be distinguished from one another, statistically or otherwise, based on the composition estimates derived from the sampling data. This can be broadly translated as "the single-family composition did not vary across the five waste and recycling service areas for recyclable materials."

There are other statistical methods to compare results among service areas that this analysis did not consider. Multi-variate statistical analyses can provide a way to compare percent composition for each of the four recyclable material categories in each of the five service areas. Here, given the large variation both within and among the sample proportions, pair-wise analyses were preferred over multi-variate, composite statistical techniques. An alternative approach would be to consider confidence intervals generated via bootstrapping or conducting the analysis using a randomized distribution of the data. Also, the data could be transformed such that that they conform to the requirements and assumptions of the ensuing statistical analyses. Careful consideration of the implications on the interpretation of the analyses is required before undertaking an alternate route of analysis.

Appendix F: Field Forms

The field forms are included in the following order:

§ Vehicle Selection Form

§ Self-haul Vehicle Survey Form

§ Hand Sort Tally Sheets - Waste

§ Visual Characterization Tally Sheets - Waste

§ Set Out Count Sheet

§ Hand Sort Tally Sheets - Organics

§ Sample Placards

§ Net Weight Cards (used for self-haul samples)

Figure F-1. Vehicle Selection Form

City of Tacoma Waste Characterization Vehicle Selection Form

Site: Tacoma Landfill

Date: Saturday, November 07   **Goal:** __25__ **Samples Total**

Each number represents an expected vehicle based on the available data.

Cross off each number as a vehicle representing each category passes through the scalehouse. When a circled number comes up, cross it off and hand the corresponding vehicle a pink placard. Record placard ID on vehicle survey form.

Place a number placard in the window of each vehicle chosen for a sample and instruct them to drive to the sampling area where they will be met by the sorting supervisor.

Residential Self Haul

Non-C&D: **SH-RN** (13 total)

```
 1  2  3  4 (5) 6  7  8  9 (10)
11 12 13 14 (15) 16 17 18 19 (20)
21 22 23 24 (25) 26 27 28 29 (30)
31 32 33 34 (35) 36 37 38 39 (40)
41 42 43 44 (45) 46 47 48 49 (50)
51 52 53 54 (55) 56 57 58 59 (60)
61 62 63 64 (65) 66 67 68 69 70
71 72 73 74 75 76 77 78 79 80
```

C&D: **SH-RCD** (4 total)

```
 1  2 (3) 4  5 (6) 7  8 (9) 10
11 (12) 13 14 15 16 17 18 19 20
```

Commercial Self Haul

Non-C&D: **SH-CN (4 total)**

```
 1  2  3  4  5  6  7  8  9 (10)
11 12 13 14 15 16 17 18 19 (20)
21 22 23 24 25 26 27 28 29 (30)
31 32 33 34 35 36 37 38 39 (40)
41 42 43 44 45 46 47 48 49 50
51 52 53 54 55 56 57 58 59 60
```

C&D: **SH_CCD (4 total)**

```
 1  2  3  4  5 (6) 7  8  9 10
11 (12) 13 14 15 16 17 (18) 19 20
21 22 23 (24) 25 26 27 28 29 30
```

Figure F-2. Hand Sort Tally Sheet (front) - Waste

Tally Sheet - Page 1

2015 Tacoma Waste Composition Study

PAPER

Newspaper				
OCC/Kraft				
High Grade Paper				
Low Grade Paper				
Waxed OCC				
Pizza Boxes				
Compostable/Soiled Paper				
. Comp. Single-use Food Service				
n-comp. Single-use Food Service				
R/C Paper				

PLASTIC

#1 PET Bottles				
#2 HDPE Bottles				
#1-#7 Other Containers				
Expanded Poly. Food grade				
Expanded Poly. Nonfood				
. Comp. Single-use Food Service				
n-comp. Single-use Food Service				
ean Shopping/Dry Cleaning Bags				
Other Clean PE Film				
Other Film				
Durable Plastic Products				
R/C Plastics				

GLASS

Clear Glass Containers				
Green Glass Containers				
Brown Glass Containers				
Plate Glass				
R/C Glass				

METAL

Aluminum Beverage Cans				
Aluminum Foil/Containers				
Other Nonferrous				
Tin Food Cans				
Empty Aerosol Cans				
Major Appliances				
Oil filters		Filter Count:		
Other Ferrous				
R/C Metal				

ORGANICS

Food Waste, Vegetative				
Other Food Waste				
Leaves & Grass				
Prunings and Trimmings				
Branches and Stumps				
Textiles/Clothing				
Disposable Diapers				
Animal Excrement/Litter				
R/C Organic				

Wood Waste

Dimensional Lumber				
Pallets and Crates				
Engineered Wood				
Other Untreated Wood				
Painted Wood				
Treated Wood				
R/C Wood				

Construction Materials

Concrete				
Clean Drywall				
Other Drywall				
Asphalt Paving				
Asphalt Shingles				
Other Asphalt Roofing				
Insulation				
Carpet				
Carpet Padding				
Soil, Rocks, Sand				
Ceramics and Brick				
R/C Construction				

Figure F-3. Hand Sort Tally Sheet (back) - Waste

E-Waste				
Televisions and CRTs				
Computers/Flat Monitors				
Computer Peripherals				
Other Consumer Electronics				

HOUSEHOLD HAZ. / SPECIAL WASTE				
Pesticides/Herbicides				
Flourescent Lighting				
Asbestos				
Paints/Solvents/Adhesives				
Dry-cell Batteries				
Wet-cell Batteries				
Gasoline/Kerosene				
Motor Oil				
Vehicle/Equipment Fluids				
Medical Wastes				
Pharmaceuticals				
House Cleaners/Chemicals				
Other Potentially Hazardous				

Other				
Furniture				
Tires				
Mattresses				
Non-distinct Fines				

SAMPLE NUMBER_____

DATE_____

ROUTE # / DRIVER_____

VEHICLE TYPE: (circle)

A - Auto (Car or SUV)

P - Pickup Trucks

V - Van

T - Other Truck

RL - Rear Loader

FL - Front Loader

SL - Side Loader

ROC - Compactor Roll-Off

ROD - Loose Roll-Off

For RO Loads:

Biz Name:

_____

Industry Group: (circle)

A - Manufacturing

B - Wholesale

C - Retail

D - Restaurant

E - Hotel/Motel

F - Office

G - Health Care

H - Education

I - Transportation

J - Other Services

K - Mixed Businesses

L - CDL

M - Other Non-residential

N - Homeowner Box

Notes:

Tally Sheet - Page 2

Figure F-4. Visual Characterization Tally Sheet - Waste

Step 1:

Sample ID: _____

Date: _____

Route/Driver: _____

Step2 : Record Construction and Vehicle Data Below

Step 3: Measure & record load volume.
(Include trailer dimensions if applicable.)

Dimensions:

_____in x _____in x _____in

_____in x _____in x _____in (trailer)

Step 4 : Photograph Sample

Step 5: Identify and record all broad material categories (in bold) that appear in the load.

Step 6: Estimate composition of load by volume for each broad material category (in bold).

Step 7: For each broad material category, estimate composition by volume of each specific material component.

Step 8: Make sure broad material category estimates AND material component estimates EACH total 100%.

Construction Type (circle):

N=new construction

R=remodel

D=demolition

RF=roofing

O=other c&d/mixed

DK=don't know

Vehicle Type (circle):

A - Auto/SUV   RL - Rear Loader

P - Pickups   FL - Front Loader

V - Van   SL - Side Loader

T - Other   ROC - Compactor Roll-Off

ROD - Loose Roll-Off

Notes:

☐ **Paper: _____%**

Newspaper
OCC/Kraft
High Grade Paper
Low Grade Recyclable Paper
Waxed OCC
Pizza Boxes
Compostable Paper
Pot. Comp. Single-use Food Service
Non-comp. Single-use Food Service
R/C Paper

☐ **Plastic: _____%**

#1 PETE Bottles
#2 HDPE Bottles
#1-#7 Other Containers
Expanded Polystyrene, Food Grade
Expanded Polystyrene, Non-food Grade
Pot. Comp. Single-use Food Service
Non-comp. Single-use Food Service
Clean Shopping/Dry Cleaner Bags
Other Clean PE Film
Other Film
Durable Plastic Products
R/C Plastic
% Subtotal (must equal 100%)

☐ **Glass: _____%**

Clear Glass Containers
Green Glass Containers
Brown Glass Containers
Plate Glass
R/C Glass
% Subtotal (must equal 100%)

☐ **Metals: _____%**

Aluminum Cans
Aluminum Foil/Containers
Other Non-Ferrous
Tinned Food Cans
Empty Aerosol Cans
Major Appliances
Oil Filters
Other Ferrous
R/C Metal
% Subtotal (must equal 100%)

☐ **Organics: _____%**

Food Waste, Vegetative
Food Waste, Other
Leaves and Grass
Prunings and Trimmings
Branches and Stumps
Textiles and Clothing
Disposable Diapers
Animal Excrement/Litter
R/C Organics
% Subtotal (must equal 100%)

☐ **Wood Waste: _____%**

Dimensional Lumber
Pallets and Crates
Engineered Wood
Other Untreated Wood
Painted Wood
Treated Wood
R/C Wood
% Subtotal (must equal 100%)

☐ **Construction Materials: _____%**

Concrete
Clean Drywall
Other Drywall
Asphalt Paving
Asphalt Shingles
Other Asphalt Roofing
Insulation
Carpet
Carpet Padding
Soil, Rocks, Sand
Ceramics and Brick
R/C Construction Materials
% Subtotal (must equal 100%)

☐ **E-Waste: _____%**

Televisions/Other Items with CRT's
Computers and Flat Screen Monitors
Computer Peripherals
Other Consumer Electronics
% Subtotal (must equal 100%)

☐ **HHW/Special: _____%**

Pesticides and Herbicides
Fluorescent Lighting
Asbestos
Paints, Solvents, and Adhesives
Dry-cell Batteries
Wet-cell Batteries
Gasoline and Kerosene
Motor Oil
Vehicle and Equipment Fluids
Medical Waste
Pharmaceuticals
Household Cleaners and Chemicals
Other Potentially Hazardous Waste
% Subtotal (must equal 100%)

☐ **Mixed Residue/MSW: _____%**

Furniture
Tires
Matresses
Non-distinct Fines
% Subtotal (must equal 100%)

Grand Total:_____%
(Must equal 100%)

Figure F-5. Set Out Count Sheet
City of Tacoma Organics Compostion Study
Set Out and Participant Count Form

Day: _____   **Route:** _____

Surveyor: _____   **Subscribers:** _____

n= _____

1. Cross off one number from the set out column for each set out

2. Cross off one number from the participant column if the set out contains food waste

3. Circle the corresponding number from the set out column for each sampled set out

Set Outs																				
1	2	3	4	5	6	7	8	9	10		451	452	453	454	455	456	457	458	459	460
11	12	13	14	15	16	17	18	19	20		461	462	463	464	465	466	467	468	469	470
21	22	23	24	25	26	27	28	29	30		471	472	473	474	475	476	477	478	479	480
31	32	33	34	35	36	37	38	39	40		481	482	483	484	485	486	487	488	489	490
41	42	43	44	45	46	47	48	49	50		491	492	493	494	495	496	497	498	499	500
51	52	53	54	55	56	57	58	59	60		501	502	503	504	505	506	507	508	509	510
61	62	63	64	65	66	67	68	69	70		511	512	513	514	515	516	517	518	519	520
71	72	73	74	75	76	77	78	79	80		521	522	523	524	525	526	527	528	529	530
81	82	83	84	85	86	87	88	89	90		531	532	533	534	535	536	537	538	539	540
91	92	93	94	95	96	97	98	99	100		541	542	543	544	545	546	547	548	549	550
101	102	103	104	105	106	107	108	109	110		551	552	553	554	555	556	557	558	559	560
111	112	113	114	115	116	117	118	119	120		561	562	563	564	565	566	567	568	569	570
121	122	123	124	125	126	127	128	129	130		571	572	573	574	575	576	577	578	579	580
131	132	133	134	135	136	137	138	139	140		581	582	583	584	585	586	587	588	589	590
141	142	143	144	145	146	147	148	149	150		591	592	593	594	595	596	597	598	599	600
151	152	153	154	155	156	157	158	159	160		601	602	603	604	605	606	607	608	609	610
161	162	163	164	165	166	167	168	169	170		611	612	613	614	615	616	617	618	619	620
171	172	173	174	175	176	177	178	179	180		621	622	623	624	625	626	627	628	629	630
181	182	183	184	185	186	187	188	189	190		631	632	633	634	635	636	637	638	639	640
191	192	193	194	195	196	197	198	199	200		641	642	643	644	645	646	647	648	649	650
201	202	203	204	205	206	207	208	209	210		651	652	653	654	655	656	657	658	659	660
211	212	213	214	215	216	217	218	219	220		661	662	663	664	665	666	667	668	669	670
221	222	223	224	225	226	227	228	229	230		671	672	673	674	675	676	677	678	679	680
231	232	233	234	235	236	237	238	239	240		681	682	683	684	685	686	687	688	689	690
241	242	243	244	245	246	247	248	249	250		691	692	693	694	695	696	697	698	699	700
251	252	253	254	255	256	257	258	259	260		701	702	703	704	705	706	707	708	709	710
261	262	263	264	265	266	267	268	269	270		711	712	713	714	715	716	717	718	719	720
271	272	273	274	275	276	277	278	279	280		721	722	723	724	725	726	727	728	729	730
281	282	283	284	285	286	287	288	289	290		731	732	733	734	735	736	737	738	739	740
291	292	293	294	295	296	297	298	299	300		741	742	743	744	745	746	747	748	749	750
301	302	303	304	305	306	307	308	309	310		751	752	753	754	755	756	757	758	759	760
311	312	313	314	315	316	317	318	319	320		761	762	763	764	765	766	767	768	769	770
321	322	323	324	325	326	327	328	329	330		771	772	773	774	775	776	777	778	779	780
331	332	333	334	335	336	337	338	339	340		781	782	783	784	785	786	787	788	789	790
341	342	343	344	345	346	347	348	349	350		791	792	793	794	795	796	797	798	799	800
351	352	353	354	355	356	357	358	359	360		801	802	803	804	805	806	807	808	809	810
361	362	363	364	365	366	367	368	369	370		811	812	813	814	815	816	817	818	819	820
371	372	373	374	375	376	377	378	379	380		821	822	823	824	825	826	827	828	829	830
381	382	383	384	385	386	387	388	389	390		831	832	833	834	835	836	837	838	839	840
391	392	393	394	395	396	397	398	399	400		841	842	843	844	845	846	847	848	849	850
401	402	403	404	405	406	407	408	409	410		851	852	853	854	855	856	857	858	859	860
411	412	413	414	415	416	417	418	419	420		861	862	863	864	865	866	867	868	869	870
421	422	423	424	425	426	427	428	429	430		871	872	873	874	875	876	877	878	879	880
431	432	433	434	435	436	437	438	439	440		881	882	883	884	885	886	887	888	889	890
441	442	443	444	445	446	447	448	449	450		891	892	893	894	895	896	897	898	899	900

Samples ___

SO ___

Totals: ___

Route ___

Day ___

Sampler ___

Figure F-6. Hand Sort Tally Sheet - Organics

Sample ID: _____

Date: _____

Route: _____

Sampler: _____

Volume: _____X_____X_____

Notes:

Organics	Wt.1	Wt.2	Wt.3	Wt.4
Food Waste, Vegetative				
Other Food Waste				
Leaves, Grass, Prunings, Trimmings				
Branches				

Other Compostable	Wt.1	Wt.2	Wt.3	Wt.4
Waxed Cardboard				
Pizza Boxes				
Compostable paper				
Potentially Compostable Single-use Food Service Paper				
Potentially Compostable Single-use Food Service Plastic				
Other Compostable Organics				

Other Non-ompostable	Wt.1	Wt.2	Wt.3	Wt.4
Newspaper				
OCC/Kraft				
Mixed recyclable paper				
Recyclable polycoats				
Non-compostable Single-use Food Service Paper				
Recyclable plastic				
Non-compostable Single-use Food Service Plastic				
Clean shopping/dry cleaning bags				
Other non-compostable film				
Recyclable glass				
Recyclable Metal				
Animal poo				
Other Materials				

Figure F-7. Sample Placard

Figure F-8. Net Weight Cards

1

Net Weight:_____

2

Net Weight:_____

3

Net Weight:_____

4

Net Weight:_____

5

Net Weight:_____

6

Net Weight:_____