

# 2020-2021 Wisconsin Statewide Waste Characterization Study

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- Brown County Transfer Station – Mr. Chad Doverspike
- Outagamie County Landfill – Mr. Gregory Parins
- Waste Management Ridgeview Landfill – Mr. Kurt Kietzer

## **Northern Region:**

- City of Superior Moccasin Mike Landfill – Ms. Darienne McNamara
- Waste Management Timberline Trail Landfill – Ms. Tina Hultman

## **South Central Region:**

- Dane County Landfill Site No. 2 (Rodefeld) – Ms. Roxanne Wienkes
- GFL Glacier Ridge Landfill – Mr. Jacob Margelofsky
- Waste Management Deer Track Park Landfill – Mr. Joe Hackbarth

## **Southeast Region:**

- Waste Management Metro RDF – Mr. Travis Thorson
- GFL Emerald Park Landfill – Mr. Daniel Otzelberger
- Waste Management Orchard Ridge Landfill – Mr. Brett Coogan

## **West Central Region:**

- Cranberry Creek Landfill – Ms. Melissa Brock
- GFL Seven Mike Creek Landfill – Mr. John Blackmon
- La Crosse County Landfill – Mr. Jadd Stilwell

# 1 EXECUTIVE SUMMARY

The Wisconsin Department of Natural Resources (WDNR) contracted with SCS Engineers (SCS) in 2020 to update Wisconsin's statewide waste characterization Study (2020-2021 Study or Study). This Study continued WDNR's long history of tracking the types and quantities of waste disposed in Wisconsin. The 2020-2021 Study was designed to conform to previous statewide waste characterization studies to facilitate the comparison and tracking of waste disposal trends. This Study provides meaningful data to help WDNR and local governments document the impact of existing diversion initiatives, make program and policy decisions to expand waste reduction and recycling goals, strengthen economic development efforts, understand where additional education may be needed, and improve overall quality of life in communities and throughout the state.

The 15 host facilities where waste sampling and sorting activities took place represent the diversity of solid waste facilities in the State of Wisconsin with respect to geography and size. Sampling and sorting activities took place at facilities that dispose of larger quantities of waste. This facilitated the collection of representative data as it provided a greater cross-section of waste to sample. Multiple facilities in each of WDNR's five regions participated in the Study.

State law assesses fees on several types of solid waste disposed in Wisconsin landfills. The Study focused on two categories of waste:

- Category 1 - Municipal solid waste (MSW)
- Category 25 – Construction and demolition debris (CDD)

The overall objectives of the Study were as follows:

1. Use field collection methods that statistically measure waste composition data for WDNR Category 1 municipal solid waste (MSW) generated in Wisconsin and disposed at permitted solid waste facilities in the state. SCS used the methods in ASTM International Standard D 5231 – 92 (Revised 2016) *Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste* to complete this Study.
2. Develop statewide waste composition data by weight for MSW disposed by the Single family residential, multi-family, and institutional/commercial/industrial (ICI) generating sectors individually and overall for the State of Wisconsin and each region individually for 85 different material components.
3. Perform standard statistical analyses of the waste composition data by calculating standard deviations and the 90 percent confidence intervals for each material component.
4. Visually estimate and calculate the composition of WDNR Category 25 construction and demolition debris (CDD) disposed at permitted solid waste facilities in each region.
5. Design the Study so that it can be compared to previous waste characterization studies to identify waste disposal changes and trends and for ease of replication in future studies that may be commissioned.

This Study provides waste composition data for each WDNR region and overall for the State of Wisconsin for the following waste generating sectors:

- **Single Family Residential** – Encompasses MSW generated from single family homes and multi-unit properties with no more than four units.
- **Multi-Family** – Includes MSW generated at properties with five or more Single family residential units.
- **Institutional/Commercial/Industrial (ICI)** – Includes MSW generated at commercial, institutional, and industrial facilities.
- **Construction and Demolition Debris (CDD)** – Includes construction and demolition waste from home and/or commercial construction or demolition job sites.

Regional waste characterization data is an aggregation of the data collected from each host facility in each particular region. The overall statewide data is an aggregation of regional data collected.

The 2020-2021 Study was conducted over two time periods as follows:

- Season 1 – September – November 2020
- Season 2 – March – April 2021

**Exhibit 1** summarizes the overall Category 1 MSW composition for waste materials disposed in Wisconsin. **Table 1** provides a more detailed breakdown of the MSW characterization results for all material components measured. **Appendix E** includes acronyms for material abbreviations in the tables. The data presented is aggregated from the single family residential, multi-family, and ICI waste generating sectors and represents the overall MSW waste stream. **Exhibit 2**, **Exhibit 3**, and **Exhibit 4** summarize the overall MSW composition data for the Single family residential, multi-family, and ICI waste streams, respectively. Detailed waste composition profiles for these individual generating sectors are provided in the results section of this report.

Exhibit 1. Overall Category 1 MSW Statewide Waste Composition

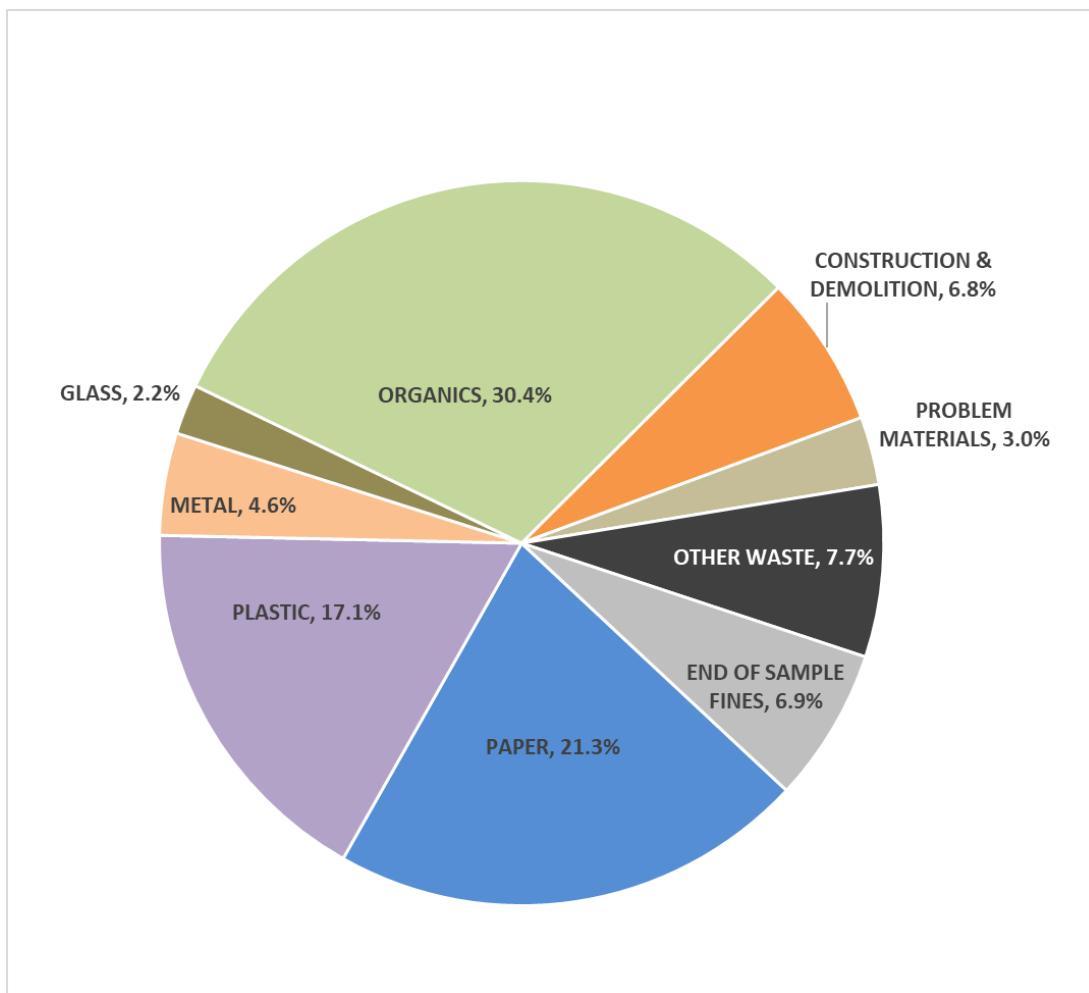


Table 1. Overall Category 1 MSW Statewide Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>					
1 Newsprint (ONP)	39,200	0.9%	2.5%	0.7%	1.1%
2 High Grade Office Paper	61,800	1.4%	2.3%	1.2%	1.6%
3 Magazines/Catalogs	32,800	0.8%	1.3%	0.6%	0.9%
4 Uncoated OCC - Recyclable	138,700	3.2%	7.1%	2.6%	3.8%
5 Coated OCC	4,700	0.1%	0.6%	<0.1%	0.2%
6 Boxboard	54,800	1.3%	1.1%	1.2%	1.4%
7 Cartons - Aseptic/Gable Top Containers	16,900	0.4%	1.2%	0.3%	0.5%
8 Mixed Paper - Recyclable	223,300	5.1%	7.9%	4.5%	5.8%
9 Compostable Paper	232,000	5.3%	3.8%	5.0%	5.6%
10 Other Paper	120,700	2.8%	4.2%	2.4%	3.1%
<b>Total Paper</b>	<b>924,900</b>	<b>21.3%</b>			
<b>PLASTIC</b>					
11 PET (#1) Bottles	67,500	1.6%	3.0%	1.3%	1.8%
12 Natural HDPE (#2) Bottles	12,300	0.3%	0.5%	0.2%	0.3%
13 Colored HDPE (#2) Bottles	18,600	0.4%	0.6%	0.4%	0.5%
14 PP (#5) Bottles	800	<0.1%	0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	500	<0.1%	<0.1%	<0.1%	<0.1%
PET(#1) Non-Bottle Rigid Containers & Packaging	17,600	0.4%	0.5%	0.4%	0.4%
HDPE (#2) Non-Bottle Rigid Containers & Packaging	6,100	0.1%	0.5%	<0.1%	0.2%
PP(#5) Non-Bottle Rigid Containers & Packaging	50,000	1.1%	1.1%	1.1%	1.2%
PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	12,200	0.3%	0.4%	0.2%	0.3%
Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	23,200	0.5%	0.7%	0.5%	0.6%
21 Rigid Non-Packaging	68,400	1.6%	2.3%	1.4%	1.8%
22 Bulky Rigid Plastics	32,500	0.7%	1.9%	0.6%	0.9%
23 PE Recyclable Film	38,600	0.9%	0.9%	0.8%	1.0%
24 Agricultural Film	8,000	0.2%	0.7%	0.1%	0.2%
25 Pouches	2,800	<0.1%	0.3%	<0.1%	<0.1%
26 Other Flexible Films	311,200	7.2%	4.8%	6.8%	7.6%
27 PS Foam (#6)	34,100	0.8%	0.8%	0.7%	0.8%
28 Compostable Plastics	1,200	<0.1%	0.3%	<0.1%	<0.1%
29 Other Plastics	40,000	0.9%	1.7%	0.8%	1.1%
<b>Total Plastic</b>	<b>745,600</b>	<b>17.1%</b>			
<b>METAL</b>					
30 Aluminum Beverage Containers	29,100	0.7%	0.7%	0.6%	0.7%
31 Other Aluminum	19,700	0.5%	1.5%	0.3%	0.6%
32 Ferrous ("Tin") Cans	24,400	0.6%	0.6%	0.5%	0.6%
33 Other Ferrous Scrap	57,800	1.3%	3.2%	1.1%	1.6%
34 Other Non-Ferrous Scrap	3,000	<0.1%	0.4%	<0.1%	0.1%
35 Other Metal	64,500	1.5%	3.3%	1.2%	1.8%
<b>Total Metals</b>	<b>198,500</b>	<b>4.6%</b>			

Table 1. Overall Category 1 MSW Statewide Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
		<b>Composition</b>		<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>					
36 Clear Containers - Beverage	27,300	0.6%	1.5%	0.5%	0.8%
37 Colored Containers - Beverage	21,700	0.5%	0.8%	0.4%	0.6%
38 Glass Food Containers	16,900	0.4%	0.6%	0.3%	0.4%
39 Other Glass	31,700	0.7%	2.5%	0.5%	0.9%
<b>Total Glass</b>	<b>97,600</b>	<b>2.2%</b>			
<b>ORGANICS</b>					
40 Yard Materials - <6"	80,000	1.8%	4.5%	1.5%	2.2%
41 Yard Materials - >6"	8,400	0.2%	1.3%	<0.1%	0.3%
42 Food Scraps (Not Traditionally Edible)	238,500	5.5%	5.5%	5.0%	5.9%
43 Wasted Food	615,500	14.1%	10.6%	13.3%	15.0%
44 Diapers	154,400	3.5%	3.7%	3.2%	3.9%
45 Animal Waste/Kitty Litter	103,400	2.4%	4.3%	2.0%	2.7%
46 Bottom Fines/Dirt	33,100	0.8%	2.8%	0.5%	1.0%
47 Other Organic Material	88,900	2.0%	3.0%	1.8%	2.3%
<b>Total Organics</b>	<b>1,322,200</b>	<b>30.4%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>					
48 Treated Wood	19,600	0.4%	1.6%	0.3%	0.6%
49 Untreated Clean Dimensional Lumber	58,200	1.3%	4.9%	0.9%	1.7%
50 Unpainted Engineered Wood	44,500	1.0%	4.7%	0.6%	1.4%
51 Painted/Stained Wood	43,600	1.0%	5.1%	0.6%	1.4%
52 Other Recyclable Wood	13,500	0.3%	3.7%	<0.1%	0.6%
53 Rock, Concrete, Brick	6,300	0.1%	0.7%	<0.1%	0.2%
54 Gypsum Wallboard - Demo	33,900	0.8%	4.2%	0.4%	1.1%
55 Gypsum Wallboard - Clean Scrap	8,000	0.2%	3.1%	<0.1%	0.4%
56 Roofing Shingles	3,500	<0.1%	0.7%	<0.1%	0.1%
57 PVC	2,600	<0.1%	0.3%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	6,800	0.2%	0.8%	<0.1%	0.2%
59 Other CDD	56,100	1.3%	3.3%	1.0%	1.6%
<b>Total Construction &amp; Demolition</b>	<b>296,600</b>	<b>6.8%</b>			

Table 1. Overall Category 1 MSW Statewide Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean</b>	<b>Standard</b>	<b>90% Confidence Limits</b>	
		<b>Composition</b>	<b>Deviation</b>	<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>					
60 Televisions - CRT	2,800	<0.1%	1.1%	<0.1%	0.2%
61 Televisions - Non-CRT	500	<0.1%	0.2%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	16,200	0.4%	1.4%	0.3%	0.5%
63 Non-Banned Electronic Equipment	14,800	0.3%	1.0%	0.3%	0.4%
64 Small Electrical Appliances	28,400	0.7%	1.9%	0.5%	0.8%
65 White Goods - Refrigerated	2,100	<0.1%	0.7%	<0.1%	0.1%
66 White Goods - Non-Refrigerated	2,000	<0.1%	0.9%	<0.1%	0.1%
67 Lead Acid Batteries	1,000	<0.1%	0.4%	<0.1%	<0.1%
68 Other Batteries	4,700	0.1%	0.2%	<0.1%	0.1%
69 Fluorescent Light Tubes	100	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	700	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	8,200	0.2%	1.7%	<0.1%	0.3%
72 Paint	7,100	0.2%	1.3%	<0.1%	0.3%
73 Automotive Used Oil/Filters	2,000	<0.1%	0.3%	<0.1%	<0.1%
74 Household Hazardous Waste	2,100	<0.1%	0.4%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	2,200	<0.1%	0.3%	<0.1%	<0.1%
76 Other Problem Materials	37,300	0.9%	3.4%	0.6%	1.1%
<b>Total Problem Materials</b>	<b>132,200</b>	<b>3.0%</b>			
<b>OTHER WASTE</b>					
77 Textiles	240,700	5.5%	6.4%	5.0%	6.1%
78 Carpet	44,300	1.0%	3.9%	0.7%	1.3%
79 Carpet Padding	5,800	0.1%	0.8%	<0.1%	0.2%
80 Wood Pallets	8,900	0.2%	2.0%	<0.1%	0.4%
81 Bulky Items	1,900	<0.1%	0.8%	<0.1%	0.1%
82 Mattresses and Box Springs	100	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	23,000	0.5%	2.9%	0.3%	0.8%
84 Aerosol Cans	7,900	0.2%	0.3%	0.2%	0.2%
85 Compressed Gas Containers	1,300	<0.1%	0.3%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>333,900</b>	<b>7.7%</b>			
<b>END OF SAMPLE FINES</b>					
Other Paper	30,300	0.7%	1.1%	0.6%	0.8%
Other Plastic	23,900	0.5%	1.0%	0.5%	0.6%
Other Glass	1,100	<0.1%	0.5%	<0.1%	<0.1%
Bottom Fines/Dirt	122,900	2.8%	3.8%	2.5%	3.1%
Food Scraps	23,600	0.5%	1.1%	0.5%	0.6%
Wasted Food	16,600	0.4%	0.9%	0.3%	0.5%
Other Organics	80,100	1.8%	2.6%	1.6%	2.1%
<b>TOTALS</b>	<b>298,600</b>	<b>6.9%</b>			
<b>TOTALS</b>	<b>4,350,100</b>	<b>100.0%</b>			

Note: Composition based on 398 samples

Exhibit 2. Overall Category 1 MSW Single Family Residential Statewide Waste Composition

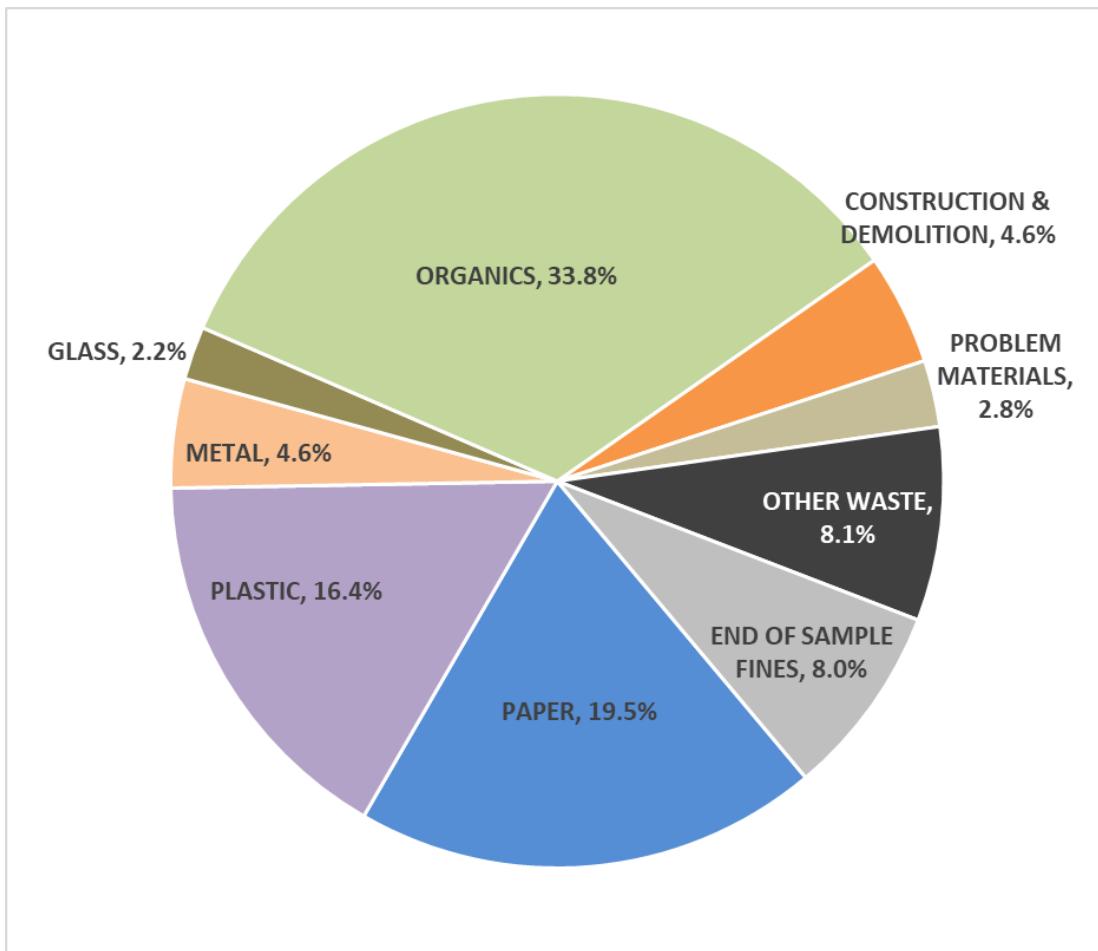


Exhibit 3. Overall Category 1 MSW Multi-Family Statewide Waste Composition

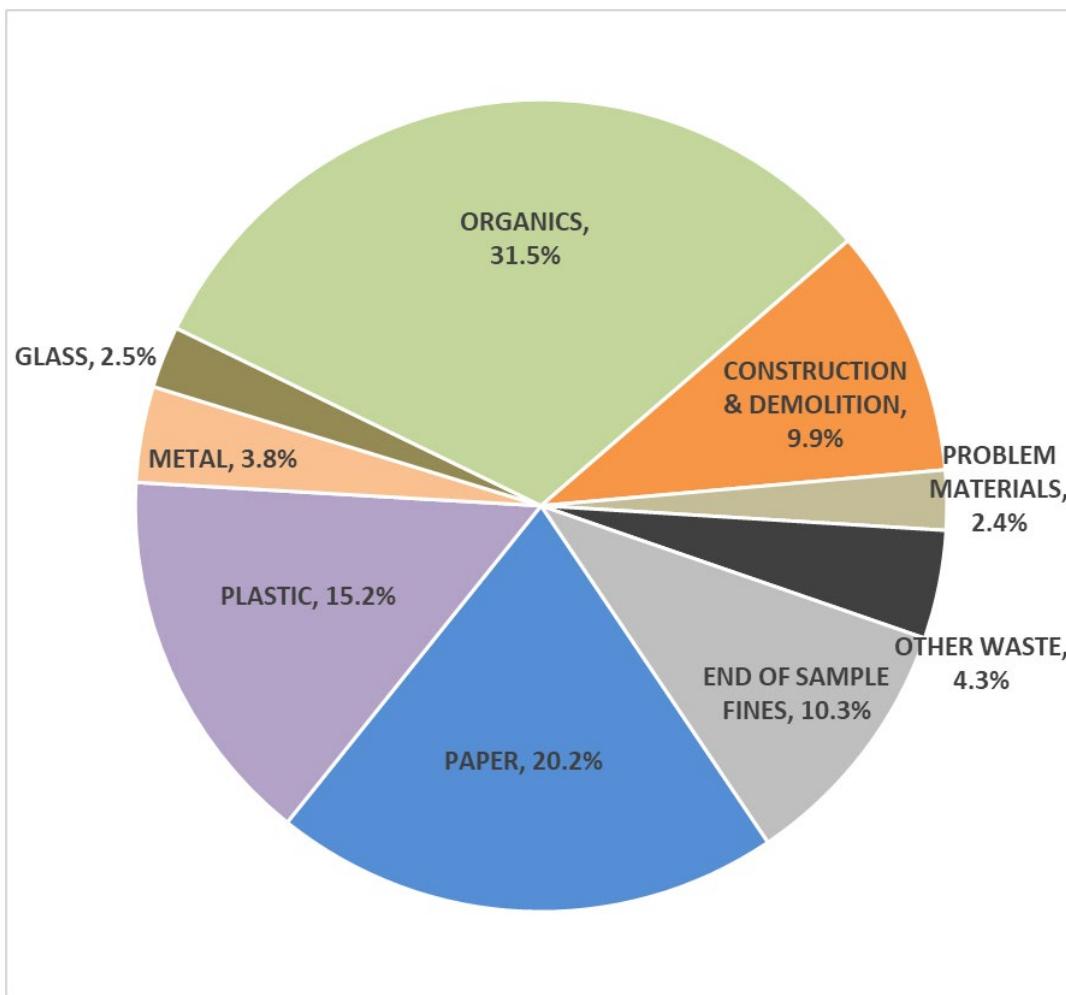
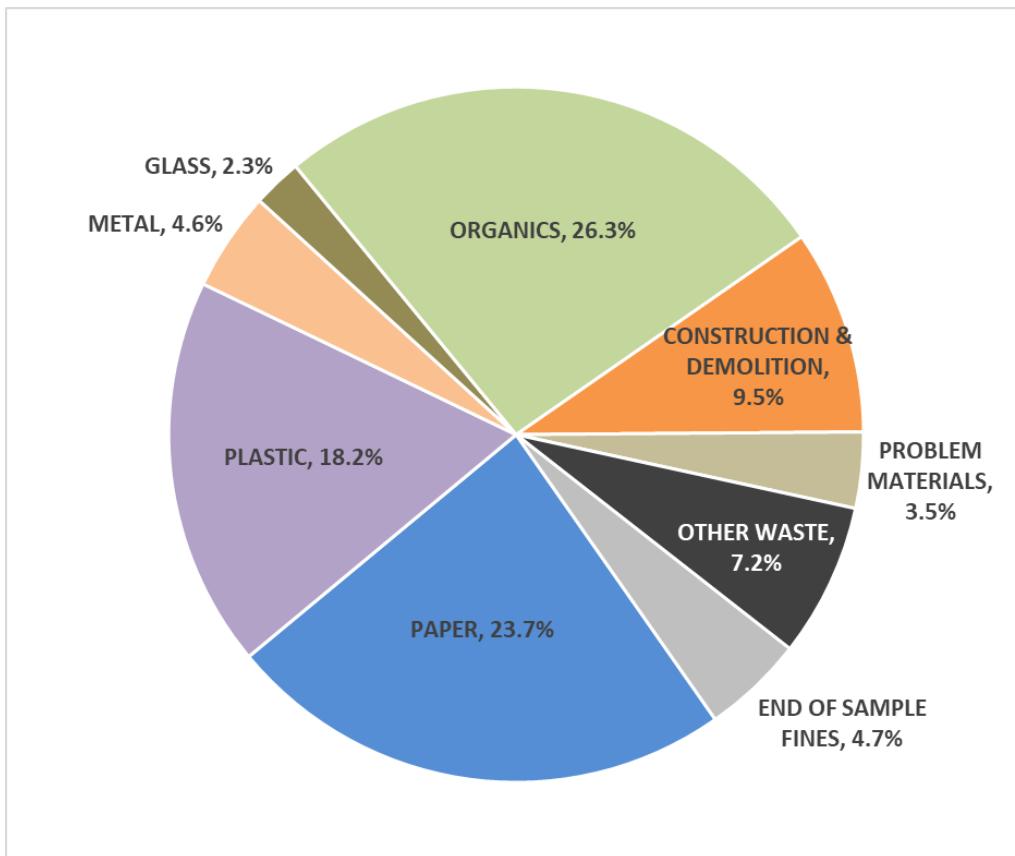


Exhibit 4. Overall Category 1 MSW ICI Statewide Waste Composition



**Table 2** summarizes the top 10 materials components that comprise the largest portions of the overall Category 1 MSW waste stream along with the comparison to the top ten materials from the 2009 Study. **Table 3** summarizes the top 10 materials components that comprise the largest portions of the overall Category 25 CDD waste stream along with the comparison to the top ten materials from the 2009 Study. **Table 4** summarizes the top 10 materials components from each generating sector from the 2021 Study.

Table 2. Comparison of the Top 10 Category 1 MSW Material Components from 2009 and 2020-2021

2020-2021 Study Results		2009 Study Results <sup>1</sup>	
Material Component	Percent Composition	Material Component	Percent Composition
Wasted Food (typically edible or spoiled food that was wasted because of spoilage or discarded before being eaten; not a result of food preparation or scraps)	14.5%	Food Scraps <sup>2</sup> (typically edible or spoiled food that was wasted because of spoilage or discarded before being eaten, including food waste resulting of food preparation and food scraps)	10.6%
Other Flexible Films (non-PE film and non-film flexibles)	7.2%	Roofing Shingles (asphalt shingles tarpaper; also tarpaper from built-up roofing)	5.8%
Food Scraps (not traditionally edible)	6.0%	Compostable Paper (tissues and paper including OCC that are soiled with food, such as paper plates, paper cups, pizza boxes, popcorn bags and paper towels)	5.0%
Textiles (clothing, bedding, curtains, blankets, stuffed animals, cotton diapers, other cloth material and leather goods)	5.5%	Painted/Stained Wood (wood that has had an external coating applied, such as paint or varnish)	4.4%
Compostable Paper (plastic lined paper products meeting ASTM D-6868, food contaminated paper (including OCC) and low-grade paper that does not fit into the Mixed Paper-Recyclable category)	5.3%	Other Plastic Film (flexible plastic film regardless of resin type, not including plastic film shopping bags or plastic film industrial packaging)	4.3%
Mixed Paper - Recyclable (paper that would be included in residential "mixed mail" or commercial "office pack" recycling programs, not including newsprint, high grade office paper, magazines/catalogs, uncoated and coated OCC, boxboard or cartons)	5.1%	Uncoated OCC - Recyclable (uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating)	3.9%
Bottom Fines/Dirt (small fragments, typically less than 2 inches, and miscellaneous fines and dirt)	3.6%	Yard Materials - <6" (leaves, grass clippings, yard and garden debris and brush, including clean woody vegetative material no greater than 6 inches in diameter)	3.8%
Diapers (infant and adult disposable diapers)	3.5%	Composite/Other Plastic (all items that were plastic but combined with metal, wood or glass)	3.6%
Other Paper (all paper that doesn't fit in the other paper categories and items that are primarily paper but include other materials such as plastic or metal)	3.5%	Bottom Fines/Dirt (small fragments that pass through the 1/4" sort screen, and miscellaneous fines and dirt)	3.6%
Uncoated OCC - Recyclable (uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating)	3.2%	Other Paper (all paper that doesn't fit in the other paper categories and items that are primarily paper but include other materials such as plastic or metal)	3.5%
<b>TOTAL</b>	<b>57.5%</b>	<b>TOTAL</b>	<b>48.5%</b>

Table 3. Comparison of the Top 10 Category 25 CDD Material Components from 2009 and 2020-2021

2020-2021 Study Results		2009 Study Results <sup>1</sup>	
Material Component	Percent Composition	Material Component	Percent Composition
Other C&D (any other material used in home construction, not including wood, rock, brick , concrete, gypsum wallboard, shingles, PVC or ceramics/porcelain fixtures)	25.0%	Roofing Shingles (asphalt shingles tarpaper; also tarpaper from built-up roofing)	29.5%
Untreated Clean Dimensional Lumber (unpainted, untreated new or demolition dimensional lumber such as 2x4s, 2x6s, etc.; may contain nails or other trace contaminants)	11.5%	Rock, Concrete, Bricks (rock gravel, Portland cement mixtures (set or unset), fire-clay bricks, asphalt pavement)	13.2%
Roofing Shingles (asphalt shingles tarpaper; also tarpaper from built-up roofing)	10.0%	Painted/Stained Wood (wood that has had an external coating applied, such as paint or varnish in more than small amounts)	10.1%
Untreated Clean Dimensional Lumber (unpainted, untreated new or demolition dimensional lumber such as 2x4s, 2x6s, etc.; may contain nails or other trace contaminants)	8.7%	Clean Dimensional Lumber (unpainted, untreated new or demolition dimensional lumber such as 2x4s, 2x6s, etc.; may contain nails or other trace contaminants)	8.8%
Gypsum Wallboard - Demo (used gypsum drywall typically with paint, wallpaper or other finish coating)	6.5%	Other C & D (any other material used in home construction, not including wood, rock, brick , concrete, gypsum wallboard, shingles, PVC or ceramics/porcelain fixtures)	5.8%
Wood Pallets (wood pallets and crating materials commonly used for industrial and commercial packaging and shipping)	5.3%	Other Ferrous Scrap (ferrous and alloyed ferrous metal scrap to which a magnet is attached, includes household, commercial and industrial materials)	4.8%
Boxboard (chipboard boxes not coated with wax, plastic or metal)	4.9%	Clean Engineered Wood (unpainted new or demolition scrap from sheet goods such as plywood, particle board, wafer board, oriented strand board and other residual materials used for sheathing and related construction uses; may contain nails or other trace contaminants)	4.7%
Rock, Concrete, Brick (rock gravel, Portland cement mixtures (set or unset), fire-clay bricks, asphalt pavement)	4.3%	Drywall - Clean Scraps (unpainted gypsum drywall construction cutoffs and scrap)	3.5%
Painted/Stained Wood (wood that has had an external coating applied, such as paint or varnish in more than small amounts)	3.5%	Bottom Fines/Dirt (small fragments that pass through the 1/4' sort screen, and miscellaneous fines and dirt)	3.0%
Uncoated OCC - Recyclable (uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating)	3.4%	Treated Wood (lumber that is either green or brown treated)	1.9%
<b>TOTAL</b>	<b>83.1%</b>	<b>TOTAL</b>	<b>85.3%</b>

<sup>1</sup> 2009 Wisconsin Statewide Waste Characterization Study, Table 3-12, Page 3-21, June 30, 2010

**Table 4. Comparison of Top 10 MSW Components by Generating Sector (2020-2021)**

Residential		Multi-Family		ICI	
Material	% Composition	Material	% Composition	Material	% Composition
Wasted Food (typically edible or spoiled food that was wasted because of spoilage or discarded before being eaten; not a result of food preparation or scraps)	14.8%	Wasted Food (typically edible or spoiled food that was wasted because of spoilage or discarded before being eaten; not a result of food preparation or scraps)	13.5%	Wasted Food (typically edible or spoiled food that was wasted because of spoilage or discarded before being eaten; not a result of food preparation or scraps)	14.6%
Food Scraps (not traditionally edible)	7.1%	Mixed Paper - Recyclable (paper that would be included in residential "mixed mail" or commercial "office pack" recycling programs, not including newsprint, high grade office paper, magazines/catalogs, uncoated and coated OCC, boxboard or cartons)	6.5%	Other Flexible Films (non-PE film and non-film flexibles)	8.3%
Other Flexible Films (non-PE film and non-film flexibles)	6.4%	Food Scraps (not traditionally edible)	5.9%	Mixed Paper - Recyclable (paper that would be included in residential "mixed mail" or commercial "office pack" recycling programs, not including newsprint, high grade office paper, magazines/catalogs, uncoated and coated OCC, boxboard or cartons)	6.6%
Textiles (clothing, bedding, curtains, blankets, stuffed animals, cotton diapers, other cloth material and leather goods)	6.3%	Gypsum Wallboard - Demo (used gypsum drywall typically with paint, wallpaper or other finish coating)	5.6%	Compostable Paper (plastic lined paper products meeting ASTM D-6868, food contaminated paper (including OCC) and low-grade paper that does not fit into the Mixed Paper-Recyclable category)	5.1%
Compostable Paper (plastic lined paper products meeting ASTM D-6868, food contaminated paper (including OCC) and low-grade paper that does not fit into the Mixed Paper-Recyclable category)	5.6%	Other Flexible Films (non-PE film and non-film flexibles)	5.0%	Uncoated OCC - Recyclable (uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating)	4.9%
Mixed Paper - Recyclable (paper that would be included in residential "mixed mail" or commercial "office pack" recycling programs, not including newsprint, high grade office paper, magazines/catalogs, uncoated and coated OCC, boxboard or cartons)	5.2%	Compostable Paper (plastic lined paper products meeting ASTM D-6868, food contaminated paper (including OCC) and low-grade paper that does not fit into the Mixed Paper-Recyclable category)	4.6%	Food Scraps (not traditionally edible)	4.8%
Diapers (infant and adult disposable diapers)	4.2%	Animal Waste/Kitty Litter (self defined)	4.3%	Textiles (clothing, bedding, curtains, blankets, stuffed animals, cotton diapers, other cloth material and leather goods)	4.5%
Animal Waste/Kitty Litter (self defined)	2.9%	Diapers (infant and adult disposable diapers)	4.1%	Other Paper (all paper that doesn't fit in the other paper categories and items that are primarily paper but include other materials such as plastic or metal)	2.9%
Other Paper (all paper that doesn't fit in the other paper categories and items that are primarily paper but include other materials such as plastic or metal)	2.7%	Textiles (clothing, bedding, curtains, blankets, stuffed animals, cotton diapers, other cloth material and leather goods)	3.7%	Diapers (infant and adult disposable diapers)	2.5%
Yard Materials - <6" (leaves, grass clippings, yard and garden debris and brush, including clean woody vegetative material no greater than 6 inches in diameter)	2.7%	Uncoated OCC - Recyclable (uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating)	3.0%	Untreated Clean Dimensional Lumber (unpainted, untreated new or demolition lumber such as 2x4s, 2x5s, etc.; may contain nails or other trace contaminants)	2.3%
<b>Total</b>	<b>57.9%</b>	<b>Total</b>	<b>56.22%</b>	<b>Total</b>	<b>56.45%</b>

## 2 INTRODUCTION

This report provides the results of the 2020-2021 Study as well as the methods used to obtain the data contained in this report. The report is organized in the following sections:

- **Background** – The background section of the report includes Wisconsin waste generating and disposal, recycling, and other data used to extrapolate the results of this Study to develop a waste composition profile for the entire state.
- **Study Design** – This section describes the design aspects of the waste characterization Study including material categories and components and, location of host facilities by region, and timing and schedule for the Study.
- **Methods** – This section discusses the methods and protocols used to select and sort samples of waste for this Study. It also includes details on how sampling plans were designed and the number of samples obtained by facility and region from each demographic and generating sector.
- **Results** – This section provides detailed results on the composition of waste disposed in the State of Wisconsin overall and by region. Results are presented graphically as well as in tables for a more detailed presentation of the data. The top 10 material components from the 2020-2021 Study are compared to the top 10 materials from 2009. Additionally, the top ten material components are compared for each region.
- **Comparison of Single Family Residential to ICI** - This section provides a comparison of major material categories between the single family residential and ICI sectors.
- **Conclusions** - This section provides conclusions on how the 2020-2021 Study achieved the desired objectives.

## 3 BACKGROUND

The WDNR has a long history of tracking the amount and components of municipal solid waste and construction and demolition debris disposed at facilities across the State of Wisconsin. These efforts have helped the State of Wisconsin develop policies and programs that reduce waste, encourage recycling, and facilitate sustainable materials management. While a significant portion of waste generated in the state is diverted from disposal, the WDNR recognizes there are additional opportunities for continued waste reduction and recycling. Over the last two decades, the WDNR has commissioned three waste characterization studies (2002, 2009, 2020-2021) to quantitatively and qualitatively measure waste disposal. The 2020-2021 Study aimed to mirror previous studies completed in 2002 and 2009 to document material disposal across the state in all five WDNR regions. The following are the guiding principles for planning and executing the Study:

1. Develop a 2020-2021 statewide waste characterization profile by weight for materials currently disposed at Wisconsin disposal facilities, including obtaining information on the Single family residential, multi-family, and ICI waste streams and how they differ;
2. Selection of waste samples that are statistically representative of the MSW and CDD disposed in Wisconsin;

3. Estimate the types and quantities of materials currently disposed of in Wisconsin that could be reused, recycled, or recovered;
4. Provide data that the WDNR and local governments can use to make decisions on expanding existing and implementing new programs and policies for diverting waste materials.
5. Mirror previous waste characterization studies to facilitate ease of comparison and duplication in the future.

The results of this Study can be used by the WDNR and local governments to document the impact of existing waste diversion activities and to make decisions on waste diversion programs that can be expanded and implemented to further divert material from disposal. This Study was completed by SCS with the assistance of WDNR and the staff at each of the host facilities.

Data provided by the WDNR's 2018 landfill tonnage report shows that 28 unique landfills accepted nearly 4.3 million tons of Category 1 MSW for disposal. Similarly, 25 unique landfills accepted over 367,000 tons of Category 25 construction and demolition waste. The WDNR oversees each of these facilities to confirm waste is managed in a way that protects the environment and public health.

## PAST STUDY COMPARISON

A guiding principle for the 2020-2021 Study was to complete it using a similar protocol and approach to the 2002 and 2009 studies to facilitate comparison. Two key challenges complicated the execution of this Study, including:

- **COVID-19 Pandemic** - The COVID-19 global pandemic significantly changed the way society operated beginning in March 2020 and continued throughout the Study. The State of Wisconsin implemented stay at home orders and many commercial establishments, including restaurants, had to close for a period of time, which was followed by reduced operating capacity restrictions. These actions resulted in an increase in generation and disposal of Single family residential waste and a corresponding decrease in the amount of commercial waste generated.
- **Acquisition of Advanced Disposal Services by Waste Management, Inc.** – When the 2020-2021 Study began, both Advanced Disposal and Waste Management operated major hauling operations and disposal facilities in Wisconsin. The acquisition of Advanced Disposal Services by Waste Management resulted in ownership changes for five of the host facilities in late October 2020. One host facility transitioned to Waste Management and four were divested to GFL Environmental. Ownership changes also affected collection and transfer operations. As a result of the changes in facility ownership, waste disposal tonnages shifted across facilities.

Given these major events that impacted the 2020-2021 Study, the following provides a summary of the similarities and differences between this Study and the Study completed in 2009.

### Similarities

- **Sampling and Sorting Protocols and Procedures** – The Category 1 MSW waste sampling and sorting protocols, including using ASTM International Standard D 5231 – 92 (Revised 2016) *Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste* to complete this Study, were the same for the both the 2020-2021 and 2009

studies. Similarly, both studies used a visual characterization method for the CDD waste samples.

- **Generating Sectors** – The 2020-2021 Study collected and analyzed data from the Single family residential, multi-family, ICI, and CDD waste generating sectors similar to the 2009 Study.
- **Target Wisconsin Generated Waste Only** – This Study only targeted the sampling and sorting of waste generated in Wisconsin. Waste samples were screened at each host facility and waste originating from out-of-state locations were excluded from the Study.
- **Confidentiality** – For the 2020-2021 Study, detailed waste sampling data obtained from individual host facilities was kept confidential and not shared with the WDNR. Results from individual facilities were aggregated to develop waste profiles for each WDNR region and overall statewide.

## Differences

- **Material Categories and Components** – Most waste categories and components measured for the 2020-2021 Study were the same as the materials measured in 2009. However there were some differences in the individual material components measured between the two studies. The 2020-2021 Study included the addition of nine new plastic materials and the delineation of wasted food from food scraps. The complete list of material differences is discussed later in this report. The WDNR provided the material category and component list for this Study.
- **Transferred Waste** – SCS's protocol called for avoiding and minimizing the number of samples obtained from mixed waste transfer trailers. However, 18 mixed samples of transferred waste were sampled and sorted as part of this Study when pure loads of Single family residential or ICI were unavailable. Data from those samples were only incorporated into the overall regional and statewide results, not individual generating sector results (i.e. Single family residential, multi-family, or ICI).
- **Seasonal Field Data Collection** – Seasonal sampling and sorting occurred from mid-September through mid-November and again from mid-March to mid-April. This contrasts with the timeframe of the 2009 Study of August-September and November-December. The schedule was impacted by contracting delays and the COVID-19 pandemic.
- **Host Facilities** – Twelve of the 15 host facilities for the 2020-2021 Study participated in the 2009 Study. The additional three 2020-2021 Study host facilities that did not participate in 2009 included the City of Superior Moccasin Mike Landfill (Northern region), Brown County Transfer Station (Northeast region), and the La Crosse County Landfill (West Central region). Facilities that participated in the 2009 Study, but not in 2020-2021 Study included BFI Waste Systems North America, Inc. (Sarona); Valley Trail RDF (Berlin); City of Milwaukee Northwest Transfer Station; and City of Milwaukee Lincoln Transfer Station.
- **Sampling Targets** – The 2020-2021 Study sampled and sorted more waste than the 2009 Study. The 2020-2021 Study sorted 398 Category 1 MSW samples (40 samples more than 2009) and visually characterized 659 CDD samples (57 samples more than 2009), for a

total sample tally of 1,057. The higher number of samples characterized provides for narrower confidence intervals and more representative data and results.

## 4 STUDY DESIGN

Developing a sound approach to complete this Study was critical for laying the foundation for a successful project that yielded reliable and statistically valid data. Careful planning went into selecting host facilities, identifying and screening waste streams, completing field activities, and analyzing data. This section describes how SCS designed the 2020-2021 Statewide Waste Characterization Study. The Study design elements included in this section reflect feedback and modifications by WDNR during the planning and execution stages of this Study.

It is important to note that the 2020-2021 Statewide Waste Characterization Study is not part of WDNR's compliance program. The results of this Study for individual host facilities are not included in this report nor shared with WDNR. Data from individual host facilities is aggregated into the regional and overall waste profiles provided in this report.

## WASTE GENERATION AND DISPOSAL

WDNR compiles waste disposal tonnage reports on an annual basis. Data included in the report is provided by all licensed MSW landfills in Wisconsin. The report includes waste disposal data by facility and waste type, including Category 1 MSW and Category 25 CDD, which were the waste streams characterized for this Study. According to WDNR, Category 1 MSW includes all Single family residential, multi-family, institutional, commercial, and industrial (when no other classification for the waste exists) wastes. Unmixed CDD waste is classified as Category 25; however, when CDD waste is mixed with Category 1 MSW on trucks or in transfer trailers this material is classified as MSW.

SCS used the WDNR tonnage report from 2018 to develop the sampling plan for this Study. **Table 5** and **Table 6** include a summary of the MSW and CDD disposed in the State of Wisconsin from the 2018 tonnage report by WDNR region. The WDNR annual waste tonnage report are available on the WDNR's website at <https://dnr.wisconsin.gov/topic/Landfills>.

Table 5. Category 1 MSW Disposed by Region

WDNR Region	Cat. 1 MSW Disposed 2018 (Tons)	% of Total MSW Disposed
Northeast	865,866	20%
Northern	359,337	8%
South Central	901,018	21%
Southeast	1,440,484	34%
West Central	719,438	17%
<b>TOTAL</b>	<b>4,286,143</b>	<b>100%</b>

Table 6. Category 25 CDD Disposed by Region

WDNR Region	Cat. 25 CDD Disposed 2018 (Tons)	% of Total CDD Disposed
Northeast	50,776	14%
Northern	7,868	2%
South Central	89,848	24%
Southeast	135,982	37%
West Central	82,945	23%
<b>TOTAL</b>	<b>367,419</b>	<b>100%</b>

## WASTE SECTORS

### Targeted Sectors

Consistent with previous WDNR statewide waste characterization studies, waste from the following generating sectors was sampled and characterized for this Study:

- **Single Family Residential** – Waste generated in single-family and multi-family households with four or fewer dwelling units; this waste material is typically collected by public or private haulers in compacting collection trucks that are either semi- or fully-automated.
- **Multi-Family residential** – Waste generated from multi-family properties with five or more dwelling units is collected by compacting collection vehicles using either dumpsters or carts as collection containers. Although waste from the multi-family sector is typically mixed with waste from the institutional, commercial, and industrial sector due to collection practices and routing, SCS worked with haulers to arrange for a small number of separate loads containing only multi-family waste for sampling and sorting. Evaluating multi-family waste separately from other single family residential waste is advantageous as waste diversion activities are unique due to reliance on property owners for education, space constraints, and the transient nature of tenants living at these properties.
- **Industrial/Commercial/Institutional (ICI)** – Waste disposed by businesses, institutions, industrial facilities, and other non-Single family residential sources (with the exception of specially classified industrial or hazardous wastes) is typically collected by private haulers in commercial containers using front- or rear-load compacting trucks.
- **Construction and Demolition Debris (CDD)** – Waste generated during construction and/or demolition activities. This waste is typically collected in open-top roll-off boxes and containers that have been stationed at construction sites.

Waste characterization results are presented separately for each of these generating sectors by region and overall for the State of Wisconsin.

## Transferred Waste

Many solid waste facilities in the State of Wisconsin report that a portion of waste disposed is delivered via large transfer trailers capable of transporting 100 cubic yards of waste or more. This waste is often material from all generating sectors (i.e. Single family residential, ICI, etc.) that is mixed together prior to transfer, making it impossible to accurately characterize. Sampling and sorting this waste is challenging for the following reasons:

- **Compaction and Processing** – Waste transferred for disposal typically has been processed in some way to facilitate loading into the transfer trailer. This processing alters the composition of the waste and it is no longer in an “as-disposed” condition, which is an important criterion for completing a waste characterization Study.
- **Physical Separation Challenges** – The processing of waste that occurs before and during loading into transfer trailers compacts waste significantly, making the physical separation and sorting extremely difficult and challenging. It also poses safety issues for sorting personnel that have to apply force to pull materials apart, increasing the potential for injury.

SCS's approach to mixed transferred waste was to avoid sampling and sorting it if possible. However, when waste receipts at a host facility indicated a significant portion (> 20 percent) of waste disposed originated from one particular transfer station, the owner/operator of that transfer station was contacted to explore one of two options for sampling and sorting of waste from the facility, including:

1. **On-site Sorting** – Arrange with the transfer station owner and/or operator to sample and sort waste at their facility. This allowed for direct sampling of waste from haulers delivering materials in as-disposed conditions that could be verified as either Single family residential, multi-family, ICI, or CDD. This approach resulted in the most accurate data as SCS staff employed our stringent screening process (described below) to confirm waste generator source. Staff at the Brown County Transfer Station allowed our SCS team to sample and sort waste at their facility using this protocol.
2. **Segregated Material Loads** – If a transfer station was unable to accommodate on-site sampling and sorting, SCS requested that transfer station operators segregate as best they can loads of Single family residential, multi-family, ICI, and CDD waste and transfer only full or partial loads of waste from one particular generating sector to the host facility for sorting. This approach puts more onus on transfer station personnel and SCS did not follow this protocol for sampling and sorting of waste from a transfer facility.

A limited number of transfer trailer waste samples were obtained and sorted when no pure loads of Single family residential, multi-family, and ICI waste were available for sorting. Given the limited time for fieldwork at each host facility, it was important that the sort crew make the most of their time at each facility even if it meant sorting samples of transferred waste. Data from sorted transferred waste was aggregated into the overall statewide waste characterization Study results, but was not included in the results for the Single family residential, multi-family, or ICI generating sectors.

## HOST FACILITIES

SCS sampled and sorted waste at 15 different host facilities across all WDNR regions. To identify and prioritize host facility selection, SCS used the following criteria:

- **Past Study Participant** – Facilities serving as host sites for the 2002 and 2009 waste characterization studies provided a reasonably representative cross-section of disposed waste generated in Wisconsin. Additionally, host facilities for the 2002 and 2009 studies were the same and all sites were licensed municipal solid waste disposal facilities. These characteristics coupled with their familiarity with Study protocols and requirements made these sites ideal targets again for the 2020-2021 Study.
- **Expressed Interest in Participating** – Staff from four facilities expressed interest in participating in the 2020-2021 Study to the WDNR. Two of these facilities were previous Study participants.
- **WDNR Regions** – Multiple disposal facilities in each WDNR region were targeted to host field activities to account for different waste generation and disposal practices in all parts of the state. Targeting facilities in each WDNR region also allowed for sampling and sorting of waste materials generated from urban, suburban, and rural areas of the state.
- **Larger Facilities** – Facilities that receive larger quantities of waste from targeted generating sectors were prioritized to maximize the number of samples obtained and sorted. Larger facilities provide greater representation of waste disposed in Wisconsin and thus made the best use of the limited time available for sorting at each facility.
- **Waste Generating Sectors** – To facilitate efficiency, disposal facilities that receive and dispose of waste from all targeted generating sectors (Single family residential, multi-family, ICI, and CDD) were prioritized.
- **Publicly and Privately Owned Facilities** – SCS sought to select a mix of both publicly and privately owned host facilities.

In order to understand whether host facilities could adequately support this 2020-2021 Study, SCS prepared a questionnaire and distributed it to all identified potential host facilities (**Appendix A**). The goal of the questionnaire was to understand more about each facility to better assess which sites would best facilitate the Study and allow for the collection of statistically valid and representative data. Information from these questionnaires was compiled and reviewed to select the host facilities to participate in the Study. **Table 7** summarizes the host facilities selected to participate in the Study. **Table 7** also includes additional information on the waste quantities disposed at each host facility (2018) and the percentage of MSW and CDD disposed in each region and overall represented by the host facilities. Overall, about 72 percent of Wisconsin generated MSW was disposed at host facilities participating in this Study. Similarly, 62 percent of Wisconsin-generated CDD was disposed at host facilities participating in this Study.

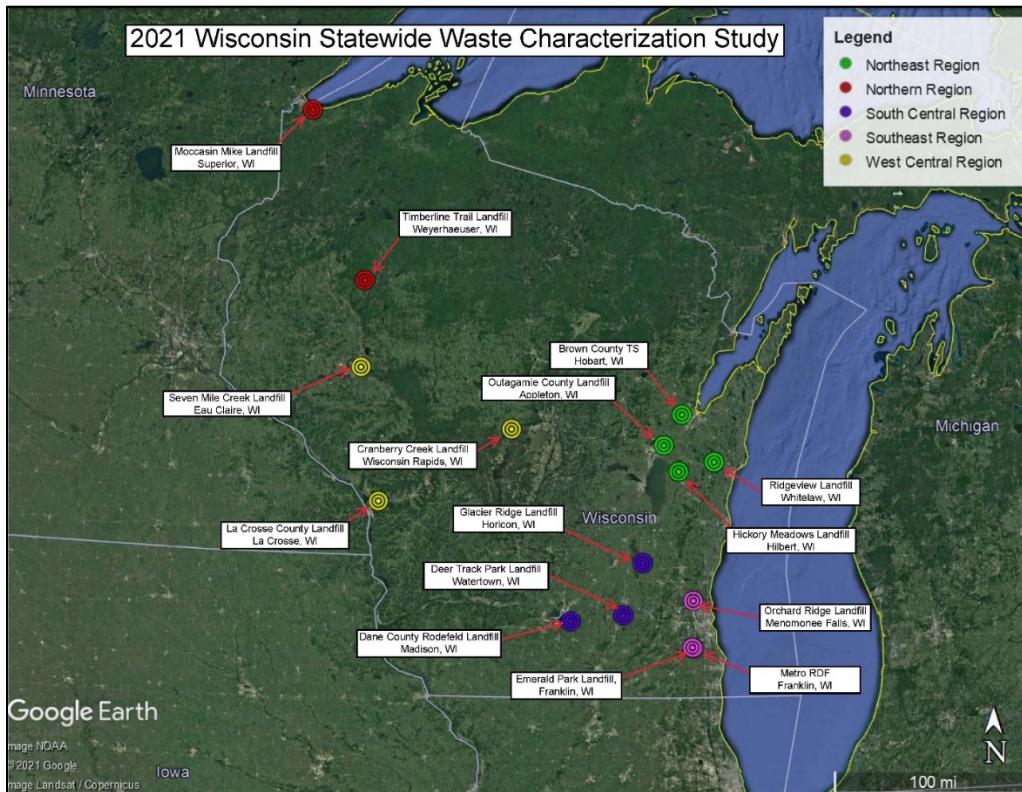
Table 7. Host Facilities and Disposal Summary

WDNR Region	Facility	Wisconsin Generated Cat. 1 MSW Disposed (2018)	Percent of Cat. 1 MSW Disposed by Region	Wisconsin Generated Cat. 25 CDD Disposed (2018)	Percent of Cat. 25 CDD Disposed by Region
Southeast	Metro RDF	204,736	68.8%	9,706	58.7%
	Emerald Park Landfill	267,684		64,821	
	Orchard Ridge Landfill	508,772		13,430	
South-central	Dane County Landfill Site No. 2 (Rodefeld)	177,816	82.2%	11,065	60.4%
	Deer Track Park Landfill	132,909		14,696	
	Glacier Ridge Landfill	441,081		25,128	
Northeast	Hickory Meadows Landfill	171,644	81.2%	22,876	53.4%
	Outagamie County Landfill	467,882		23,215	
	Brown County TS*				
	Ridgeview Landfill	104,632		1,102	
West Central	Cranberry Creek Landfill	180,189	67.2%	11,810	77.6%
	Seven Mile Creek Landfill	257,456		34,286	
	La Crosse County Landfill	61,924		21,130	
Northern	Timberline Trail Landfill	86,077	48.2%	779	58.4%
	Moccasin Mike Landfill	116,698		4,117	
<b>TOTAL</b>		<b>3,179,500</b>	<b>71.9%</b>	<b>258,161</b>	<b>61.8%</b>

\* MSW and CDD disposed at the Brown County Transfer Station are included in tonnages reported by the Outagamie County Landfill

**Exhibit 5** is a map that indicates the location of all 15 host facilities for the 2020-2021 Study.

Exhibit 5. Map of 2020-2021 Study Host Facilities



## MATERIAL CATEGORIES AND COMPONENTS

Material categories and components measured as part of this Study were similar to the materials sorted during the 2009 Study. SCS reviewed each material category and component with WDNR staff prior to commencing field work to confirm a mutual understanding of how materials are classified. This was particularly important given continual changes in product packaging that bring new materials into the waste stream. Additionally, the review of materials was helpful to understand and obtain mutual agreement on how to sort composite materials and how to handle instances when food or liquids were contained in plastic, metal, and glass packaging.

A total of 85 unique material components were measured for the 2020-2021 Study. The list of material categories and components is included in **0**. Detailed descriptions of each material are included in **Appendix B**. Changes made in the materials measured from 2009 to the 2020-2021 studies included the following:

- **PET (#1) bottles/jars:** Included both beverage and non-beverage containers in 2020-2021
- **PP (#5) bottles:** Separate material sorted for 2020-2021
- **PET (#1) non-bottle rigid containers and packaging:** Separate category for 2020-2021
- **HDPE (#2) non-bottle rigid containers and packaging:** Separate category for 2020-2021
- **PP (#5) non-bottle rigid containers and packaging:** Separate category for 2020-2021
- **PS (#6) non-foam, non-bottle rigid containers and packaging:** Separate category for 2020-2021
- **Other (#7) unidentifiable non-bottle rigid containers and packaging:** Separate category for 2020-2021
- **Bulky rigid plastics:** Separate category for 2020-2021
- **Other flexible films:** Included 2009 category industrial film packaging
- **Pouches:** Separate material for 2020-2021
- **Compostable plastics:** Separate material for 2020-2021
- **Other plastic:** included composite/other plastic materials from 2009 Study
- **Food scraps and wasted food:** Separate materials for 2020-2021
- **Televisions – CRT:** Includes computer monitors and other devices with CRTs
- **Other banned and non-banned electronic equipment** (separate materials): Replaces 2009 material categories “computer related electronics” and “other electronic equipment”
- **Sharps, needles, lancets:** Separate material for 2020-2021
- **Mattresses and box springs:** Separate material for 2020-2021
- **Aerosol cans:** Separate material for 2020-2021
- **Compressed gas containers:** Separate material for 2020-2021.

Table 8. Waste Material Category and Component List  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Paper</b>	<b>Construction and Demolition Debris</b>
Newsprint (ONP)	Treated wood
High grade office paper	Untreated clean dimensional lumber
Magazines/catalogs	Untreated clean engineered wood
Uncoated OCC – recyclable	Painted/stained wood
Coated OCC	Other recyclable wood
Boxboard	Rock, concrete, brick
Cartons – gable top/aseptic	Gypsum wallboard – demo
Mixed paper – recyclable	Gypsum wallboard – clean scrap
Compostable paper	Roofing shingles
Other paper	PVC
	Ceramics/porcelain fixtures
	Other C&D
<b>Plastic</b>	<b>Problem Materials</b>
PET (#1) bottles/jars	Televisions – CRT
Natural HDPE (#2) bottles/jars	Televisions – non-CRT
Colored HDPE (#2) bottles/jars	Other banned electronic equipment
PP (#5) bottles	Non-banned electronic equipment
Other (#3, #4, #6 and #7) bottles	Small electrical appliances
PET (#1) non-bottle rigid containers and packaging	White goods – refrigerated
HDPE (#2) non-bottle rigid containers and packaging	White goods – non-refrigerated
PP (#5) non-bottle rigid containers and packaging	Lead-acid batteries
PS (#6) non-foam, non-bottle rigid containers and packaging	Other batteries
Other (#7)/unidentifiable non-bottle rigid containers and packaging	Fluorescent light tubes
Rigid non-packaging	Compact fluorescent light bulbs
Bulky rigid plastics	Tires
PE recyclable film	Paint
Agricultural film	Automotive used oil/filters
Pouches	Household hazardous waste
Other flexible films	Sharps, needles, lancets
PS foam (#6)	Other problem materials
Compostable plastics	<b>Other Waste</b>
Other plastics	Textiles
<b>Metal</b>	<b>Carpet</b>
Aluminum beverage containers	Carpet padding
Other aluminum	Wood pallets
Ferrous ("tin") cans	Bulky items
Other ferrous scrap	Mattresses and box springs
Non-ferrous metals	Wood furniture
Other metal	Aerosol cans

Table 8. Waste Material Category and Component List (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Glass</b>	Compressed gas containers
Clear containers - beverage	
Colored containers - beverage	
Glass food containers	
Other glass	
<b>Organics</b>	
Yard materials – <6"	
Yard materials – >6"	
Food scraps (not traditionally edible)	
Wasted food	
Diapers	
Animal waste/kitty litter	
Bottom fines/dirt	
Other organic material	

## TIMING AND SCHEDULE

Waste composition often varies by season. Some material types, such as yard waste and construction/demolition debris, are observed more frequently in one or more seasons. Waste characterization studies that account for the seasonal variation of material disposal and recovery often result in a more accurate representation of the waste streams in a state or locality.

The scheduling of fieldwork to collect data was based on the availability of host facilities as well as the need to avoid unusual conditions or circumstances that may impact the disposed waste stream. Examples include extreme weather events, frozen waste conditions, holidays, and other local events that might impact waste disposal at a host facility. To the extent feasible, field activities at each host facility were scheduled for “typical” waste disposal conditions.

The original timeframe for completion of the Study (Season 1: August/September; Season 2: November/December 2020) was also impacted by contracting delays and the COVID-19 pandemic. As a result, field activities occurred over two main time periods as follows:

- Season 1 – September – November 2020;
- Season 2 – March – April 2021.

This revised field schedule allowed the WDNR to obtain waste characterization Study data from the Fall 2020 and Spring 2021 seasons. **Table 9** details the 2020-2021 Study’s field schedule in chronological order by host facility.

Table 9. Field Data Collection Schedule

WDNR Region	Facility	Cat. 1 MSW Sampling and Sorting Dates	Cat. 25 CDD Sampling and Sorting Dates
South Central	Glacier Ridge Landfill	September 21-25, 2020	September 21-25, 2020
South Central	Dane County Landfill Site No. 2 (Rodefeld)	September 28-29, 2020	September 28-29, 2020; March 18-19, 2021
Northeast	Hickory Meadows Landfill	September 30 - October 1, 2020	September 30 - October 1, 2020
Northeast	Ridgeview Landfill	October 2, 2020	October 2, 2020
Northeast	Outagamie County Landfill	October 19-21, 2020	October 19-21, 2020; March 15-17, 2021
Northeast	Brown County Transfer Station	October 22-23, 2020	October 22-23, 2020
West Central	Cranberry Creek Landfill	October 26-27, 2020	October 26-27, 2020
Northern	Timberline Trail Landfill	October 28-30, 2020	October 28-30, 2020
South Central	Deer Track Park RDF	November 9-10, 2020	November 9-10, 2020
Southeast	Emerald Park Landfill	November 11-16, 2020	November 11-16, 2020
Southeast	Metro RDF	November 17-18, 2020; March 29-31, 2021	--
Southeast	Orchard Ridge Landfill	March 15-19, 2021	--
West Central	Seven Mile Creek Landfill	March 22-26, 2021	March 22-26, 2021
Northern	Moccasin Mike Landfill	April 13-15, 2021	April 13-15, 2021
West Central	La Crosse County Landfill	--	April 12-16, 2021

## 5 METHODS

This section describes in detail the methods used to sample and sort waste for the Study. These methods conform to ASTM D5231 - 92 (Revised 2016) Standard Test Method for the Determination of the Composition of Unprocessed Solid Waste.

## SAMPLING PLAN

SCS developed detailed sampling plans for the Study that aimed to proportion the number of samples obtained and characterized in each region by the amount of waste disposed in that region (see Regional Sample Distribution section above). For example, most waste generated in Wisconsin is disposed in the heavily populated Southeast region and thus the highest number of samples for the Study were obtained from that region. The least amount of waste is disposed in the Northern region and therefore the smallest number of samples were obtained and sorted in that region. SCS also proportioned the number of samples obtained and sorted in each region by the disposal quantities from each host facility in that region. **Table 10** details the MSW waste quantities disposed and samples acquired by region. **Table 11** details the CDD quantities disposed at MSW landfills only (not CDD designed landfills) and the number of samples by region. Dane County owns a CDD recycling facility at the Dane County Landfill Site No. 2 property. The South Central region percentage of CDD only includes residuals disposed in the Dane County Landfill Site No. 2 landfill beyond those that are fee-exempt from the CDD recycling facility. Visual characterization of CDD was solely performed on the CDD entering the recycling facility at this location, as it would have likely otherwise been disposed in the landfill if the CDD recycling facility was not present. Other loads of CDD directly disposed in the landfill consisted of mixed loads of CDD and MSW.

Table 10. Category 1 MSW Sample Distribution by Region

WDNR Region	Cat. 1 MSW Disposed 2018 (Tons)	% of Total MSW Disposed	Samples Acquired by Region	% of Samples Acquired
Northeast	865,866	20%	69	17%
Northern	359,337	8%	48	12%
South Central	901,018	21%	89	22%
Southeast	1,440,484	34%	109	27%
West Central	719,438	17%	83	21%
<b>TOTAL</b>	<b>4,286,143</b>	<b>100%</b>	<b>398</b>	<b>100%</b>

Table 11. Category 25 CDD Sample Distribution by Region

WDNR Region	Cat. 25 CDD Disposed 2018 (Tons)	% of Total CDD Disposed	Samples Acquired by Region	% of Samples Acquired
Northeast	50,776	14%	112	18%
Northern	7,868	2%	0	0%
South Central	89,848	24%	162	25%
Southeast	135,982	37%	245	38%
West Central	82,945	23%	120	19%
<b>TOTAL</b>	<b>367,419</b>	<b>100%</b>	<b>639</b>	<b>100%</b>

To develop each host facility's sampling plan, the SCS team issued a questionnaire to collect site specific data (**Appendix A**). Upon receipt of each facility's questionnaire, the SCS team hosted a conference call with staff from each facility to review and clarify the data provided. Among other things, important information reviewed during each conference call was the breakdown of Single family residential and ICI waste and the amount of waste delivered to each facility via transfer trailers. SCS also noted which haulers transport different types of waste to each facility.

Using site specific data and estimates, SCS stratified the waste receipts at each host facility among Single family residential and ICI generating sectors to establish a target number of samples from each sector. This allowed SCS to put together a sampling plan that specified the number of samples to be obtained from each generating sector and overall based on scheduled field days at each host facility. The number of field days at each facility was based on the quantity of waste received at each site. It also assumed 10 samples could be manually sorted in one day. Note that the sampling plans were used as a guide for sampling and sorting at each facility and that actual sample acquisition varied, including the need to sample and sort mixed transfer trailer waste when pure loads of Single family residential or ICI waste were unavailable. **Table 12** details the number of MSW samples obtained and sorted by host facility and region. **Table 13** details the number of samples acquired and visually characterized for the CDD generating sector.

Table 12. Category 1 MSW Samples Sorted by Facility and Region

Region	Facility	Sample Acquisition				Total Samples per Region
		# of RES Samples	# of ICI Samples	# of Mixed Samples	Total # of Samples	
Southeast	Metro RDF	20	16	0	36	109
	Emerald Park Landfill	8	15	0	23	
	Orchard Ridge Landfill	30	20	0	50	
South-central	Dane County Rodefeld Landfill	14	6	0	20	89
	Deer Track Park Landfill	13	6	0	19	
	Glacier Ridge Landfill	27	17	6	50	
Northeast	Hickory Meadows Landfill	10	10	0	20	69
	Outagamie County Landfill	17	6	0	23	
	Brown County TS	8	8	0	16	
	Ridgeview Landfill	5	4	1	10	
West Central	Cranberry Creek Landfill	10	7	0	17	83
	Seven Mile Creek Landfill	27	37	2	66	
	La Crosse County Landfill	0	0	0	0	
Northern	Timberline Trail Landfill	11	1	9	21	48
	Moccasin Mike Landfill	23	4	0	27	
<b>TOTAL</b>		<b>223</b>	<b>157</b>	<b>18</b>	<b>398</b>	<b>398</b>

Table 13. Category 25 CDD Samples Characterized by Facility and Region

Region	Facility	Total # of Samples	Total Samples per Region
Southeast	Metro RDF	0	245
	Emerald Park Landfill	245	
	Orchard Ridge Landfill	0	
South-central	Dane County Rodefeld Landfill	155	162
	Deer Track Park Landfill	0	
	Glacier Ridge Landfill	7	
Northeast	Hickory Meadows Landfill	0	112
	Outagamie County Landfill	96	
	Brown County TS	16	
	Ridgeview Landfill	0	
West Central	Cranberry Creek Landfill	1	140
	Seven Mile Creek Landfill	47	
	La Crosse County Landfill	92	
Northern	Timberline Trail Landfill	0	0
	Moccasin Mike Landfill	0	
<b>TOTAL</b>		<b>659</b>	<b>659</b>

## EQUIPMENT

The equipment used to complete the fieldwork at each host facility was the same throughout the project. Equipment used to carry out the Study included:

- **Containers** – Approximately 85 containers were used to place the sorted waste components and weigh out each sample. Containers were a mix of 30-gallon trash cans, 18-gallon totes, and five-gallon buckets. Each container was tare-weighted at the beginning of the sort event for each facility. A unique number identifier was spray painted on the container prior to the start of field activities. **Figure 1** shows sample containers.
- **Sort Table** – The sort table was a piece of plywood that was impermeable and capable of supporting 150 pounds of waste materials. The plywood was mounted on multiple sawhorses about four feet off the ground. **Figure 2** shows the sort table.

- **Scales** – EAS factory-calibrated scales were used to weigh waste samples and sorted waste components. Scales recorded weight to the nearest 0.02 pound.
- **Personal Protective Equipment (PPE)** – Protecting the health and safety of all project staff was the number one priority of the project. Field staff were required to wear steel/composite toe shoes or boots, safety glasses, reflective safety vests, and puncture resistant gloves at all times when participating in fieldwork. Field staff were required to wear masks at all times to mitigate the spread of COVID-19. Some host facilities required the project team wear hard hats.
- **Data forms** – SCS created a separate data collection form for each waste sample sorted during the project. This form contained fields to capture information on the waste sample, including the waste generating sector and hauler information. This form was used to record waste component weights. **Appendix C** includes sample waste collection forms that were used to collect data in the field.

Figure 1. Sample Containers and Staged Sample for Sorting



Figure 2. Sort Table



## SAMPLE SELECTION AND SORTING

### Category 1 MSW

#### Selection

SCS utilized a “grab” sampling approach for obtaining Category 1 MSW samples for sorting. This approach involved randomly selecting collection vehicles as they enter a solid waste facility, interviewing the driver, and “grabbing” a 220 pound sample of waste from the truck.

SCS field personnel used the sampling plan developed for each host facility to select vehicles carrying category 1 MSW for sampling. In addition to using the site-specific sampling plan, we coordinated with host facility staff at the beginning of each sort to understand how targeted waste materials arrive at individual facilities.

Consistent with the ASTM Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste, Designation D 5231 – 92 (Revised 2016), each sample of waste selected weighed 200 to 220 pounds. The SCS Sampling Manager was responsible for identifying vehicles for sampling, screening loads, and obtaining the sample. Our sampling procedure targeted random and representative samples of MSW and remained consistent throughout the entire Study. The following steps were completed to obtain each sample:

1. **Truck Selection** – SCS Sampling Manager used the site-specific sampling plan and coordinated with host facility staff as needed to identify trucks delivering waste to the facility. Specific truck numbers and approximate times of material delivery were recorded to track samples and confirm the proper number of samples were obtained and sorted at each facility.
2. **Driver Interview** – When a truck carrying waste for potential sampling arrived at the scalehouse, the SCS Sampling Manager briefly interviewed the driver (in a safe location) to confirm the generating sector of the waste in the truck. If there was doubt about the origin of the waste or if the truck was carrying mixed waste or waste that originated out-of-state, it was not sampled. If the waste in the truck was deemed appropriate for sampling, the Sampling Manager directed the driver to offload the waste in a pre-arranged location.
3. **Sample Screening** – Once the waste was discharged from the collection vehicle, the Sampling Manager inspected the sample by walking around the pile. If the materials discharged appeared unusual or were not consistent with the experienced Sampling Manager's expectations of what Single family residential or ICI waste should look like, the sample was discarded and another sample was obtained. It was at the experienced Sampling Manager's sole discretion as to whether a sample was considered representative and obtained for sorting.
4. **Data Recording** – Once a truckload of waste was deemed appropriate for sampling, details of the sample, including generating sector, day/time of delivery, weather conditions, truck type, and other information were recorded on a sample record (**Appendix C**). A sample record was maintained for recording details and weights specific to that sample.
5. **Sample Acquisition** – Once the sample was inspected and selected for sorting, it was visually divided into six equally sized segments and a random number generator table (1-6) was used to select the location in the pile to sample (when possible). Each sample (200 to 220 pounds) was obtained either manually by SCS Sampling Manager or with the help a heavy equipment operator to scoop up the material. The sample was placed in large garbage cans and weighed until the appropriate amount of material was obtained. The process of acquiring the sample did not alter the apparent composition. The Sampling Manager coordinated with host facility staff to keep the sampling area clear of excess materials not part of the sample. **Figure 3** shows waste being delivered near the sorting area for sample collection.
6. **Sample Transport** – The Sampling Manager transported the sample and coordinated sample record to the sorting location for sorting.

Figure 3. Waste Being Delivered for Sample Collection



## Sorting

An experienced SCS Sorting Manager led the sorting of waste samples with the support of a six-person (typically) sort crew. A consistent, methodical, statistically-valid sorting program that was repeated for each sample was fundamental to this task. The Sorting Manager supervised the entire sorting process and actively conducted quality control measures to confirm materials were sorted and weighed properly. Each member of the sort crew was assigned select material categories for sorting (i.e., paper, plastic, etc.). This improved the efficiency and accuracy of the sorting process as sort crew staff were able to specialize and become experts in sorting the materials assigned to them.

The basic procedures and objectives for waste sorting were identical for each Category 1 MSW sample as described in the systematic approach below. **Figure 4** shows waste being manually sorted, and **Figure 5** shows the sorted waste being weighed.

Step #	Description of Activity
1	A sample of waste was transferred from containers to the sort table. Large or heavy items, such as wood panels or bulky waste, were examined and placed directly into the appropriate container for subsequent weighing.
2	Plastic bags containing materials were opened and contents manually sorted according to the agreed-upon list of materials ( <b>Appendix B</b> ). Each material component was placed in a unique container. The Sorting Manager supervised operations and provided continual quality control of the sorted waste materials.
3	Sorting of materials continued until the sample was characterized down to small materials that were generally one inch or less in size. These small materials were then visually characterized, removed from the sort table, and placed in a separate container for weighing.
4	The SCS Sorting Manager weighed the sorted materials in individual containers and performed additional quality control measures to confirm the purity of each sorted material. Tare weights of the empty containers (unique for every sample) and the combined weight of each container with the segregated materials were recorded on the sample data sheet. Measurements were made to the nearest 0.02 of a pound. Identified “problem” materials were counted (in addition to being weighed) and that count was recorded on the data sheet.
5	Upon completion of weighing all sorted materials for a sample and recording the data, materials were disposed. Host facilities provided containers for the disposal of materials.

Figure 4. Manually Sorting MSW Sample



Figure 5. Weighing Sorted MSW Sample



## Category 25 CDD

SCS utilized a visual characterization method for CDD loads. This approach involved estimating or measuring the volume of the container or vehicle that transported the waste to a disposal facility and estimating the percent fullness of the container. Once the entire waste load was offloaded, an experienced SCS staff made a systematic observation of the major material components of the load. The basic steps of the visual characterization method are as follows:

1. Identical to the protocol provided above for Category 1 MSW, the screening procedure for truck selection, driver interviews, visual inspection, and data recording were completed for each load of CDD waste visually characterized to confirm only representative samples were characterized.
2. For selected screened loads, the dimensions of the container of waste were measured or estimated and the percent fullness of the container was also estimated.
3. The load was tipped in a designated location and whenever possible a loader operator spread out the contents of the container so that there was a clear understanding of what materials are in each load. Each sample was photographed. **Figure 6** shows a CDD sample being tipped for visual characterization.
4. Experienced SCS staff made a first pass around the entire load and noted the major material components in the load. This professional then estimated the percent of the load that comprised each major material type by volume.
5. Experienced SCS staff made a second pass around the entire load and noted the secondary (smaller quantity) material components in the load. This professional then estimated the percent of the load that comprised each material type (by volume).
6. Information on the incidence of reusable items observed in each sample was recorded for small and large items in accordance with the guidance provided by WDNR.
7. All data was recorded on a data collection form unique to each CDD sample visually characterized (**Appendix C**). SCS staff confirmed that the sum of the estimated percentage equals 100.

Figure 6. CDD Being Tipped for Visual Characterization



## Data Recording and Analysis

SCS followed a rigid protocol for collecting, recording, and safeguarding data for the 2020-2021 Study. SCS collected detailed information and details on the waste samples when in the field. This information is important to document the details of each sample and can be useful to consult if unusual composition data are obtained. Data recording occurred at several key times in the field as follows:

- **Sample Acquisition** – Detailed information on the hauler and origin of the waste sample was recorded by the SCS Sampling Manager while interviewing the truck driver. Information such as hauler name, truck number, waste generator type, date/time of waste delivery, and location of collected waste were recorded on the waste sample record. This information was briefly confirmed with the driver to confirm its accuracy. This waste sample record was then transferred with the waste sample to the sorting area where the SCS Sorting Manager took over.
- **Sample Sorting** – Upon characterization of each waste sample, the SCS Sorting Manager used the waste sample record to record the weights of each sorted material category along with the unique container identifier that was used during data analysis to subtract the container weight from the material weight. The waste sample record was also used to record information or special notes about the waste sample or material categories sorted for the sample. This form was also used to record the count of problem materials in the waste stream. When all data for a waste sample was recorded, the SCS Sorting Manager took a picture of the waste sample record in order to provide back-up of the data in case the physical form were to become damaged or lost. Data recorded on each sheet was reviewed for completeness at the end of each day.

Only SCS staff handled the waste sample records with the recorded data. These forms were safeguarded while in the field. At the end of each day, waste sample records generated that day were converted to an electronic format and saved on SCS's secure network. This, coupled with photos of each form, provided important back-ups for the hard-copy waste sample records.

Data from the sample data sheets was transcribed to a master spreadsheet that was set-up specifically for this project. The raw data was recorded and standard statistical analysis were completed for each waste component category (mean, standard deviation, and 90 percent confidence intervals). Recording data on sample data sheets and transcribing it in a spreadsheet allowed for additional review and quality control of the data.

CDD waste loads are not conducive to sampling and manual sorting (as conducted with MSW) due to the size and weight of typical CDD materials. As a result, CDD waste loads were visually characterized. Based on each material's relative proportion of the load, the volume of each material was estimated. For each sample visually characterized, the volumes were converted to weights using volume-to-weight conversion factors published by U.S. EPA (**Appendix D**).

SCS conducted a standard statistical analysis on all data recorded using formulas to track data. Multiple SCS professionals reviewed and verified the data for accuracy. The data was analyzed on a facility-by-facility basis. Host facility data from each WDNR region was aggregated to develop waste characterization results for each region. All regional data was aggregated to develop a waste characterization profile for the entire State of Wisconsin. The analysis included the following calculations:

- **Percent Composition** – Conversion of actual weights of each material for each sample (after subtracting container weight) to a percent composition based on the total weight of the sample.
- **Standard Deviation** – Calculation of standard deviation for all materials in each composition profile to measure how spread out the values in a group are from the average.
- **Confidence Intervals** – Calculation of 90 percent confidence intervals for all materials in each generator and demographic sector waste composition profile.
- **Aggregation of Sample Data by Generating Sector** – Aggregation of all sample data by each generating sector: Single family residential, multi-family, ICI, and CDD.
- **Aggregation of Sample Data by Region** – Aggregation of all individual host facility data by region for each generating sector.
- **Aggregation of All Region Data for Statewide Composition** – Aggregation of regional waste data to calculate an overall statewide waste characterization profile for Wisconsin.

## 6 RESULTS

This section provides the detailed results of the Study. The results presented in this section include the overall statewide composition for WDNR Category 1 MSW (aggregated data from individual facility and regional waste profiles) and Category 25 CDD (also aggregated from individual and regional data). Additionally, MSW composition profiles for the single family residential, multi-family, and ICI generating sectors are provided individually. Data results are organized as follows:

- **Pie Chart** – Pie charts are used to show the portion of the waste stream that comprises each of the nine major waste categories evaluated.
- **Table** – Detailed tables provide the specific waste composition percentages of each of the 85 material components sorted. The tables also include the calculated standard deviations and 90 percent confidence intervals for each material category and component. **Appendix E** includes a summary of the acronyms used in the tables.

Consistent with previous studies, the results presented represent waste from the following generating sectors:

- **Single Family Residential** – Waste generated in single-family and multi-family households with four or fewer dwelling units; this waste material is typically collected by public or private haulers in compacting collection trucks. A small amount may be delivered by self-haul vehicles.
- **Multi-Family residential** – Waste generated from multi-family properties with five or more dwelling units is typically collected by compacting collection vehicles; although waste from the multi-family sector is typically mixed with waste from the ICI sector due to collection practices, SCS had limited success in working with haulers to obtain and sort pure loads of waste from multi-family properties. A total of 10 samples were sampled and sorted as pure multi-family waste.
- **Industrial/Commercial/Institutional (ICI)** – Waste disposed by businesses, institutions, and industrial facilities; waste from these facilities are typically collected by private haulers in commercial containers using front- or rear-loader compacting trucks.
- **Construction and Demolition (CDD)** – Waste generated during construction and/or demolition activities. This waste is typically collected in open-top roll-off boxes and containers that have been stationed at construction sites.

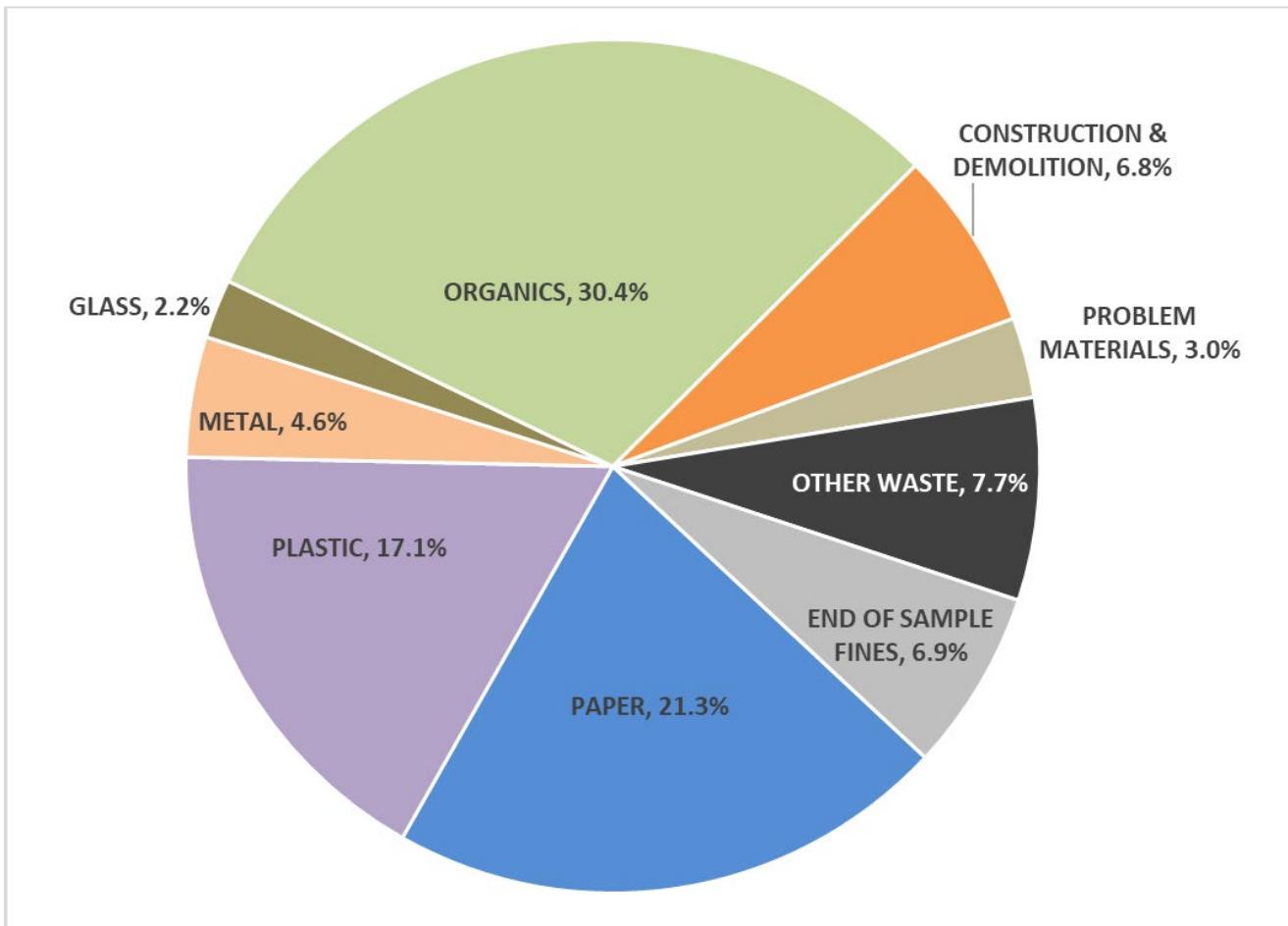
## **OVERALL STATEWIDE WASTE COMPOSITION**

### Category 1 MSW

#### **Overall**

**Exhibit 6** provides a summary of the nine material categories that compose the overall Category 1 MSW disposed in Wisconsin. Data is provided for each category as a percentage of the total weight. Note that the overall waste composition includes waste from the Single family residential, multi-family, and ICI waste generating sectors only. CDD composition is presented separately. As indicated, organic waste composes the largest portion of the waste stream at 30.4 percent, followed by paper at 21.3 percent, and plastic at 17.1 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 6. Overall Statewide Waste Composition



**Table 14** provides the detailed breakdown of the composition based on weight for all material components measured as part of this Study. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 14. Overall Statewide Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>					
1 Newsprint (ONP)	39,200	0.9%	2.5%	0.7%	1.1%
2 High Grade Office Paper	61,800	1.4%	2.3%	1.2%	1.6%
3 Magazines/Catalogs	32,800	0.8%	1.3%	0.6%	0.9%
4 Uncoated OCC - Recyclable	138,700	3.2%	7.1%	2.6%	3.8%
5 Coated OCC	4,700	0.1%	0.6%	<0.1%	0.2%
6 Boxboard	54,800	1.3%	1.1%	1.2%	1.4%
7 Cartons - Aseptic/Gable Top Containers	16,900	0.4%	1.2%	0.3%	0.5%
8 Mixed Paper - Recyclable	223,300	5.1%	7.9%	4.5%	5.8%
9 Compostable Paper	232,000	5.3%	3.8%	5.0%	5.6%
10 Other Paper	120,700	2.8%	4.2%	2.4%	3.1%
<b>Total Paper</b>	<b>924,900</b>	<b>21.3%</b>			
<b>PLASTIC</b>					
11 PET (#1) Bottles	67,500	1.6%	3.0%	1.3%	1.8%
12 Natural HDPE (#2) Bottles	12,300	0.3%	0.5%	0.2%	0.3%
13 Colored HDPE (#2) Bottles	18,600	0.4%	0.6%	0.4%	0.5%
14 PP (#5) Bottles	800	<0.1%	0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	500	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	17,600	0.4%	0.5%	0.4%	0.4%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	6,100	0.1%	0.5%	<0.1%	0.2%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	50,000	1.1%	1.1%	1.1%	1.2%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	12,200	0.3%	0.4%	0.2%	0.3%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	23,200	0.5%	0.7%	0.5%	0.6%
21 Rigid Non-Packaging	68,400	1.6%	2.3%	1.4%	1.8%
22 Bulky Rigid Plastics	32,500	0.7%	1.9%	0.6%	0.9%
23 PE Recyclable Film	38,600	0.9%	0.9%	0.8%	1.0%
24 Agricultural Film	8,000	0.2%	0.7%	0.1%	0.2%
25 Pouches	2,800	<0.1%	0.3%	<0.1%	<0.1%
26 Other Flexible Films	311,200	7.2%	4.8%	6.8%	7.6%
27 PS Foam (#6)	34,100	0.8%	0.8%	0.7%	0.8%
28 Compostable Plastics	1,200	<0.1%	0.3%	<0.1%	<0.1%
29 Other Plastics	40,000	0.9%	1.7%	0.8%	1.1%
<b>Total Plastic</b>	<b>745,600</b>	<b>17.1%</b>			
<b>METAL</b>					
30 Aluminum Beverage Containers	29,100	0.7%	0.7%	0.6%	0.7%
31 Other Aluminum	19,700	0.5%	1.5%	0.3%	0.6%
32 Ferrous ("Tin") Cans	24,400	0.6%	0.6%	0.5%	0.6%
33 Other Ferrous Scrap	57,800	1.3%	3.2%	1.1%	1.6%
34 Other Non-Ferrous Scrap	3,000	<0.1%	0.4%	<0.1%	0.1%
35 Other Metal	64,500	1.5%	3.3%	1.2%	1.8%
<b>Total Metals</b>	<b>198,500</b>	<b>4.6%</b>			

Table 14. Overall Statewide Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>					
36 Clear Containers - Beverage	27,300	0.6%	1.5%	0.5%	0.8%
37 Colored Containers - Beverage	21,700	0.5%	0.8%	0.4%	0.6%
38 Glass Food Containers	16,900	0.4%	0.6%	0.3%	0.4%
39 Other Glass	31,700	0.7%	2.5%	0.5%	0.9%
<b>Total Glass</b>	<b>97,600</b>	<b>2.2%</b>			
<b>ORGANICS</b>					
40 Yard Materials - <6"	80,000	1.8%	4.5%	1.5%	2.2%
41 Yard Materials - >6"	8,400	0.2%	1.3%	<0.1%	0.3%
42 Food Scraps (Not Traditionally Edible)	238,500	5.5%	5.5%	5.0%	5.9%
43 Wasted Food	615,500	14.1%	10.6%	13.3%	15.0%
44 Diapers	154,400	3.5%	3.7%	3.2%	3.9%
45 Animal Waste/Kitty Litter	103,400	2.4%	4.3%	2.0%	2.7%
46 Bottom Fines/Dirt	33,100	0.8%	2.8%	0.5%	1.0%
47 Other Organic Material	88,900	2.0%	3.0%	1.8%	2.3%
<b>Total Organics</b>	<b>1,322,200</b>	<b>30.4%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>					
48 Treated Wood	19,600	0.4%	1.6%	0.3%	0.6%
49 Untreated Clean Dimensional Lumber	58,200	1.3%	4.9%	0.9%	1.7%
50 Unpainted Engineered Wood	44,500	1.0%	4.7%	0.6%	1.4%
51 Painted/Stained Wood	43,600	1.0%	5.1%	0.6%	1.4%
52 Other Recyclable Wood	13,500	0.3%	3.7%	<0.1%	0.6%
53 Rock, Concrete, Brick	6,300	0.1%	0.7%	<0.1%	0.2%
54 Gypsum Wallboard - Demo	33,900	0.8%	4.2%	0.4%	1.1%
55 Gypsum Wallboard - Clean Scrap	8,000	0.2%	3.1%	<0.1%	0.4%
56 Roofing Shingles	3,500	<0.1%	0.7%	<0.1%	0.1%
57 PVC	2,600	<0.1%	0.3%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	6,800	0.2%	0.8%	<0.1%	0.2%
59 Other CDD	56,100	1.3%	3.3%	1.0%	1.6%
<b>Total Construction &amp; Demolition</b>	<b>296,600</b>	<b>6.8%</b>			

Table 14. Overall Statewide Waste Composition – Detailed (continued)  
(refer to Appendices B and E for descriptions of waste types and acronyms)

Material Components	2020 Tons	Mean Composition	Standard Deviation	90% Confidence Limits	
				Lower	Upper
<b>PROBLEM MATERIALS</b>					
60 Televisions - CRT	2,800	<0.1%	1.1%	<0.1%	0.2%
61 Televisions - Non-CRT	500	<0.1%	0.2%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	16,200	0.4%	1.4%	0.3%	0.5%
63 Non-Banned Electronic Equipment	14,800	0.3%	1.0%	0.3%	0.4%
64 Small Electrical Appliances	28,400	0.7%	1.9%	0.5%	0.8%
65 White Goods - Refrigerated	2,100	<0.1%	0.7%	<0.1%	0.1%
66 White Goods - Non-Refrigerated	2,000	<0.1%	0.9%	<0.1%	0.1%
67 Lead Acid Batteries	1,000	<0.1%	0.4%	<0.1%	<0.1%
68 Other Batteries	4,700	0.1%	0.2%	<0.1%	0.1%
69 Fluorescent Light Tubes	100	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	700	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	8,200	0.2%	1.7%	<0.1%	0.3%
72 Paint	7,100	0.2%	1.3%	<0.1%	0.3%
73 Automotive Used Oil/Filters	2,000	<0.1%	0.3%	<0.1%	<0.1%
74 Household Hazardous Waste	2,100	<0.1%	0.4%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	2,200	<0.1%	0.3%	<0.1%	<0.1%
76 Other Problem Materials	37,300	0.9%	3.4%	0.6%	1.1%
<b>Total Problem Materials</b>	<b>132,200</b>	<b>3.0%</b>			
<b>OTHER WASTE</b>					
77 Textiles	240,700	5.5%	6.4%	5.0%	6.1%
78 Carpet	44,300	1.0%	3.9%	0.7%	1.3%
79 Carpet Padding	5,800	0.1%	0.8%	<0.1%	0.2%
80 Wood Pallets	8,900	0.2%	2.0%	<0.1%	0.4%
81 Bulky Items	1,900	<0.1%	0.8%	<0.1%	0.1%
82 Mattresses and Box Springs	100	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	23,000	0.5%	2.9%	0.3%	0.8%
84 Aerosol Cans	7,900	0.2%	0.3%	0.2%	0.2%
85 Compressed Gas Containers	1,300	<0.1%	0.3%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>333,900</b>	<b>7.7%</b>			
<b>END OF SAMPLE FINES</b>					
Other Paper	30,300	0.7%	1.1%	0.6%	0.8%
Other Plastic	23,900	0.5%	1.0%	0.5%	0.6%
Other Glass	1,100	<0.1%	0.5%	<0.1%	<0.1%
Bottom Fines/Dirt	122,900	2.8%	3.8%	2.5%	3.1%
Food Scraps	23,600	0.5%	1.1%	0.5%	0.6%
Wasted Food	16,600	0.4%	0.9%	0.3%	0.5%
Other Organics	80,100	1.8%	2.6%	1.6%	2.1%
<b>TOTALS</b>	<b>298,600</b>	<b>6.9%</b>			
<b>TOTALS</b>	<b>4,350,100</b>	<b>100.0%</b>			

Note: Composition based on 398 samples

## Single Family Residential

Exhibit 7 provides a summary of the nine material categories that compose the overall Category 1 Single family residential MSW disposed in Wisconsin. Data is provided for each category as a percentage of the total weight. As indicated, organic waste composes the largest portion of the waste stream at 33.8 percent, followed by paper at 19.5 percent, and plastic at 16.4 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 7. Overall Statewide Single family residential Waste Composition

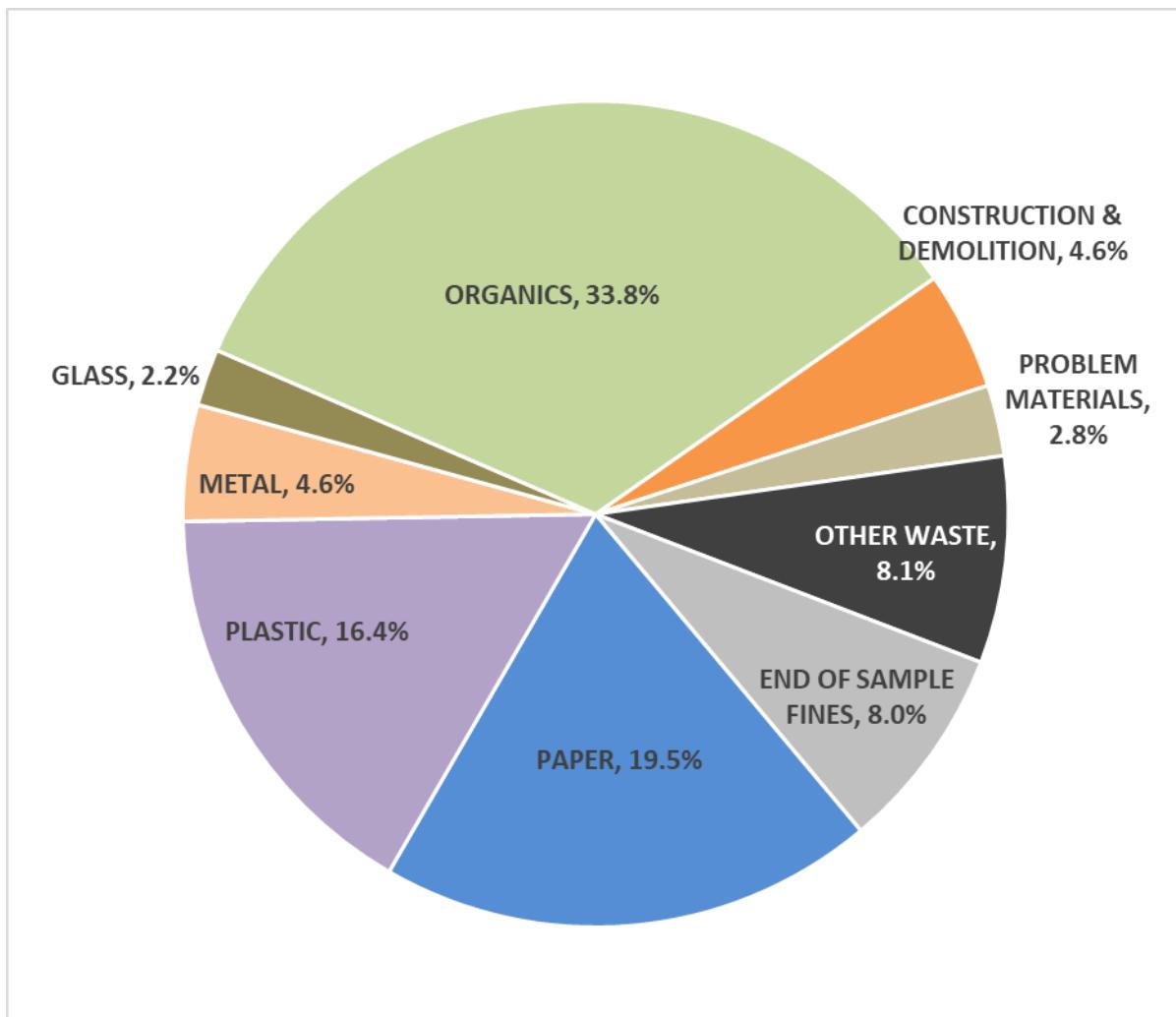


Table 15 provides a detailed profile of the overall MSW Single family residential composition by weight that includes the percent contribution of all material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 15. Overall Statewide Single Family Residential Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	0.9%	1.2%	0.7%	1.0%
2 High Grade Office Paper	1.3%	1.5%	1.2%	1.5%
3 Magazines/Catalogs	0.8%	1.1%	0.7%	0.9%
4 Uncoated OCC - Recyclable	1.9%	2.1%	1.7%	2.2%
5 Coated OCC	<0.1%	0.4%	<0.1%	0.1%
6 Boxboard	1.4%	1.1%	1.2%	1.5%
7 Cartons - Aseptic/Gable Top Containers	0.3%	0.8%	0.2%	0.4%
8 Mixed Paper - Recyclable	4.5%	2.7%	4.2%	4.8%
9 Compostable Paper	5.6%	2.7%	5.3%	5.9%
10 Other Paper	2.7%	1.7%	2.5%	2.9%
<b>Total Paper</b>	<b>19.5%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	1.5%	1.3%	1.4%	1.7%
12 Natural HDPE (#2) Bottles	0.2%	0.3%	0.2%	0.3%
13 Colored HDPE (#2) Bottles	0.5%	0.5%	0.4%	0.5%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.5%	0.5%	0.4%	0.5%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	0.1%	0.4%	0.1%	0.2%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	1.3%	0.7%	1.2%	1.3%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.2%	0.3%	0.2%	0.3%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.6%	0.6%	0.5%	0.7%
21 Rigid Non-Packaging	1.5%	1.4%	1.3%	1.6%
22 Bulky Rigid Plastics	0.6%	1.3%	0.4%	0.7%
23 PE Recyclable Film	1.0%	0.7%	0.9%	1.1%
24 Agricultural Film	0.2%	0.7%	0.1%	0.3%
25 Pouches	<0.1%	0.2%	<0.1%	<0.1%
26 Other Flexible Films	6.4%	2.5%	6.1%	6.6%
27 PS Foam (#6)	0.9%	0.7%	0.8%	0.9%
28 Compostable Plastics	<0.1%	0.1%	<0.1%	<0.1%
29 Other Plastics	0.8%	1.3%	0.7%	1.0%
<b>Total Plastic</b>	<b>16.4%</b>			
<b>METAL</b>				
30 Aluminum Beverage Containers	0.7%	0.6%	0.6%	0.8%
31 Other Aluminum	0.5%	0.5%	0.4%	0.5%
32 Ferrous ("Tin") Cans	0.6%	0.5%	0.6%	0.7%
33 Other Ferrous Scrap	1.3%	2.8%	1.0%	1.6%
34 Other Non-Ferrous Scrap	<0.1%	0.5%	<0.1%	0.1%
35 Other Metal	1.4%	2.6%	1.1%	1.7%
<b>Total Metals</b>	<b>4.6%</b>			

Table 15. Overall Statewide Single Family Residential Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	0.6%	1.9%	0.4%	0.8%
37 Colored Containers - Beverage	0.5%	0.8%	0.4%	0.6%
38 Glass Food Containers	0.5%	0.6%	0.4%	0.6%
39 Other Glass	0.6%	0.9%	0.5%	0.7%
<b>Total Glass</b>	<b>2.2%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	2.7%	5.3%	2.1%	3.3%
41 Yard Materials - >6"	0.2%	1.2%	<0.1%	0.4%
42 Food Scraps (Not Traditionally Edible)	6.4%	4.7%	5.9%	6.9%
43 Wasted Food	14.3%	7.1%	13.5%	15.1%
44 Diapers	4.2%	3.3%	3.9%	4.6%
45 Animal Waste/Kitty Litter	2.9%	4.4%	2.5%	3.4%
46 Bottom Fines/Dirt	1.0%	3.4%	0.6%	1.3%
47 Other Organic Material	2.0%	2.4%	1.8%	2.3%
<b>Total Organics</b>	<b>33.8%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.5%	1.5%	0.3%	0.6%
49 Untreated Clean Dimensional Lumber	0.6%	1.8%	0.4%	0.8%
50 Unpainted Engineered Wood	0.6%	1.4%	0.4%	0.7%
51 Painted/Stained Wood	0.7%	1.9%	0.4%	0.9%
52 Other Recyclable Wood	0.2%	1.0%	0.1%	0.3%
53 Rock, Concrete, Brick	0.2%	0.7%	<0.1%	0.3%
54 Gypsum Wallboard - Demo	0.4%	1.8%	0.2%	0.6%
55 Gypsum Wallboard - Clean Scrap	<0.1%	0.4%	<0.1%	<0.1%
56 Roofing Shingles	<0.1%	0.4%	<0.1%	<0.1%
57 PVC	<0.1%	0.3%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	0.1%	0.6%	<0.1%	0.2%
59 Other CDD	1.3%	2.9%	1.0%	1.6%
<b>Total Construction &amp; Demolition</b>	<b>4.6%</b>			

Table 15. Overall Statewide Single Family Residential Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

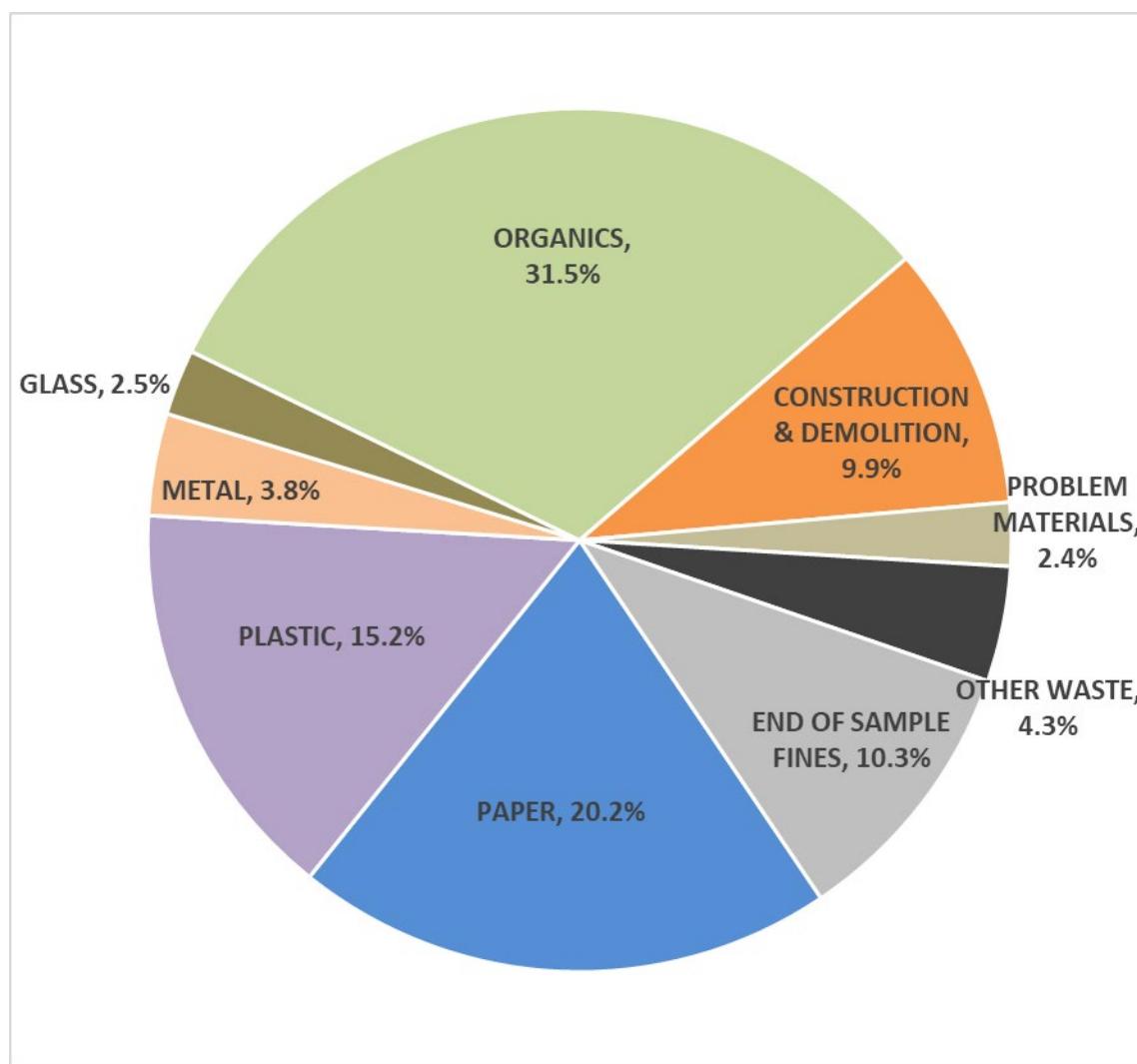
<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	0.1%	1.6%	<0.1%	0.3%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	0.4%	1.3%	0.2%	0.5%
63 Non-Banned Electronic Equipment	0.4%	1.0%	0.3%	0.5%
64 Small Electrical Appliances	0.7%	2.0%	0.5%	1.0%
65 White Goods - Refridgerated	<0.1%	0.6%	<0.1%	0.1%
66 White Goods - Non-Refridgerated	<0.1%	1.3%	<0.1%	0.2%
67 Lead Acid Batteries	<0.1%	0.1%	<0.1%	<0.1%
68 Other Batteries	0.2%	0.3%	0.1%	0.2%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	<0.1%	1.1%	<0.1%	0.2%
72 Paint	0.2%	1.4%	<0.1%	0.4%
73 Automotive Used Oil/Filters	<0.1%	0.3%	<0.1%	<0.1%
74 Household Hazardous Waste	<0.1%	0.4%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	<0.1%	0.3%	<0.1%	<0.1%
76 Other Problem Materials	0.4%	2.2%	0.2%	0.7%
<b>Total Problem Materials</b>	<b>2.8%</b>			
<b>OTHER WASTE</b>				
77 Textiles	6.3%	5.2%	5.8%	6.9%
78 Carpet	0.8%	2.7%	0.5%	1.1%
79 Carpet Padding	<0.1%	0.5%	<0.1%	0.1%
80 Wood Pallets	<0.1%	1.0%	<0.1%	0.2%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	0.5%	2.8%	0.2%	0.8%
84 Aerosol Cans	0.2%	0.3%	0.2%	0.3%
85 Compressed Gas Containers	<0.1%	0.3%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>8.1%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	0.7%	1.1%	0.6%	0.9%
Other Plastic	0.7%	1.2%	0.5%	0.8%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	3.3%	3.5%	2.9%	3.7%
Food Scraps	0.7%	1.2%	0.6%	0.8%
Wasted Food	0.5%	0.8%	0.4%	0.5%
Other Organics	2.2%	2.9%	1.9%	2.5%
<b>TOTALS</b>	<b>8.0%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 214 samples

## Multi-Family

**Exhibit 8** provides a summary of the nine material categories that comprise the overall Category 1 MSW disposed by the multi-family generating sector in Wisconsin. Data is provided for each category as a percentage of the total weight. As indicated, organic waste composes the largest portion of the waste stream at 31.5 percent, followed by paper at 20.2 percent, and plastic at 15.2 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable. Multi-family waste composition data is based on 10 samples of pure multi-family waste data.

Exhibit 8. Overall Statewide Multi-Family Waste Composition



**Table 16** provides a detailed profile of the overall multi-family MSW composition by weight that includes the percent contribution of all material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 16. Overall Statewide Multi-Family Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	0.9%	0.8%	0.5%	1.3%
2 High Grade Office Paper	1.5%	1.3%	0.8%	2.2%
3 Magazines/Catalogs	0.6%	0.8%	0.2%	1.1%
4 Uncoated OCC - Recyclable	3.0%	3.4%	1.2%	4.7%
5 Coated OCC	<0.1%	<0.1%	<0.1%	<0.1%
6 Boxboard	1.4%	0.9%	0.9%	1.9%
7 Cartons - Aseptic/Gable Top Containers	0.5%	0.9%	<0.1%	0.9%
8 Mixed Paper - Recyclable	6.0%	1.7%	5.1%	6.9%
9 Compostable Paper	4.6%	2.1%	3.5%	5.7%
10 Other Paper	1.8%	1.2%	1.2%	2.4%
<b>Total Paper</b>	<b>20.2%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	2.0%	1.1%	1.5%	2.6%
12 Natural HDPE (#2) Bottles	0.4%	0.5%	0.1%	0.6%
13 Colored HDPE (#2) Bottles	0.5%	0.4%	0.3%	0.7%
14 PP (#5) Bottles	0.2%	0.6%	<0.1%	0.5%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.6%	0.5%	0.3%	0.8%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	0.1%	0.3%	<0.1%	0.3%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	0.9%	0.9%	0.4%	1.3%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.5%	0.5%	0.2%	0.7%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.4%	0.3%	0.3%	0.6%
21 Rigid Non-Packaging	1.6%	1.2%	0.9%	2.2%
22 Bulky Rigid Plastics	0.2%	0.5%	<0.1%	0.5%
23 PE Recyclable Film	1.3%	1.4%	0.5%	2.0%
24 Agricultural Film	<0.1%	<0.1%	<0.1%	<0.1%
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	5.0%	2.7%	3.6%	6.4%
27 PS Foam (#6)	0.8%	0.5%	0.5%	1.0%
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	0.7%	1.1%	0.1%	1.3%
<b>Total Plastic</b>	<b>15.2%</b>			
<b>METAL</b>				
30 Aluminum Beverage Containers	1.0%	1.2%	0.4%	1.7%
31 Other Aluminum	0.4%	0.2%	0.3%	0.5%
32 Ferrous ("Tin") Cans	0.7%	0.5%	0.5%	1.0%
33 Other Ferrous Scrap	0.6%	0.7%	0.2%	1.0%
34 Other Non-Ferrous Scrap	<0.1%	<0.1%	<0.1%	<0.1%
35 Other Metal	1.0%	2.1%	<0.1%	2.1%
<b>Total Metals</b>	<b>3.8%</b>			

Table 16. Overall Statewide Multi-Family Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	0.4%	0.5%	0.1%	0.7%
37 Colored Containers - Beverage	0.5%	0.8%	0.1%	0.9%
38 Glass Food Containers	0.5%	0.7%	0.1%	0.9%
39 Other Glass	1.1%	2.6%	<0.1%	2.4%
<b>Total Glass</b>	<b>2.5%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	1.4%	3.6%	<0.1%	3.3%
41 Yard Materials - >6"	<0.1%	<0.1%	<0.1%	<0.1%
42 Food Scraps (Not Traditionally Edible)	5.1%	5.2%	2.4%	7.8%
43 Wasted Food	12.4%	5.8%	9.3%	15.4%
44 Diapers	4.1%	2.0%	3.1%	5.1%
45 Animal Waste/Kitty Litter	4.3%	5.2%	1.6%	7.0%
46 Bottom Fines/Dirt	1.7%	3.9%	<0.1%	3.8%
47 Other Organic Material	2.4%	3.7%	0.5%	4.4%
<b>Total Organics</b>	<b>31.5%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.2%	<0.1%	<0.1%	<0.1%
49 Untreated Clean Dimensional Lumber	0.7%	0.3%	0.5%	0.8%
50 Unpainted Engineered Wood	1.5%	1.6%	0.6%	2.3%
51 Painted/Stained Wood	0.7%	2.9%	<0.1%	2.2%
52 Other Recyclable Wood	<0.1%	1.0%	<0.1%	0.5%
53 Rock, Concrete, Brick	<0.1%	<0.1%	<0.1%	<0.1%
54 Gypsum Wallboard - Demo	5.6%	0.3%	5.5%	5.8%
55 Gypsum Wallboard - Clean Scrap	<0.1%	11.2%	<0.1%	5.8%
56 Roofing Shingles	0.1%	<0.1%	<0.1%	<0.1%
57 PVC	<0.1%	0.5%	<0.1%	0.2%
58 Ceramics/Porcelain Fixtures	<0.1%	<0.1%	<0.1%	<0.1%
59 Other CDD	1.0%	<0.1%	<0.1%	<0.1%
<b>Total Construction &amp; Demolition</b>	<b>9.9%</b>			

Table 16. Overall Statewide Multi-Family Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

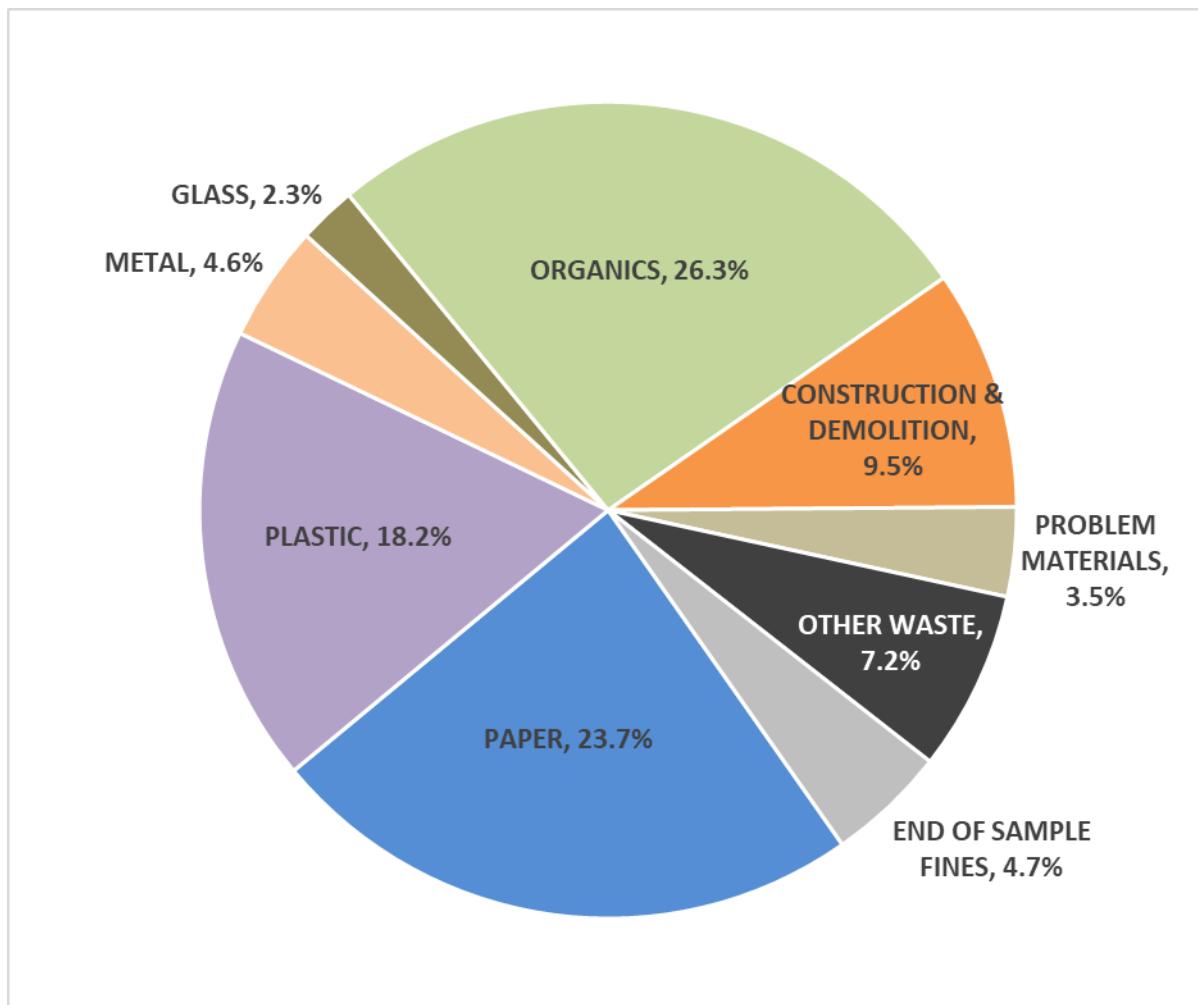
<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	0.4%	1.3%	<0.1%	1.1%
62 Other Banned Electronic Equipment	0.3%	0.5%	<0.1%	0.5%
63 Non-Banned Electronic Equipment	0.2%	0.3%	<0.1%	0.4%
64 Small Electrical Appliances	1.4%	2.4%	<0.1%	2.6%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	<0.1%	0.1%	<0.1%	0.1%
73 Automotive Used Oil/Filters	<0.1%	<0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	<0.1%	<0.1%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	<0.1%	<0.1%	<0.1%	<0.1%
76 Other Problem Materials	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Problem Materials</b>	<b>2.4%</b>			
<b>OTHER WASTE</b>				
77 Textiles	3.7%	4.1%	1.6%	5.8%
78 Carpet	0.5%	1.3%	<0.1%	1.2%
79 Carpet Padding	<0.1%	<0.1%	<0.1%	<0.1%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	<0.1%	<0.1%	<0.1%	<0.1%
84 Aerosol Cans	<0.1%	0.1%	<0.1%	0.2%
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>4.3%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	0.5%	1.0%	<0.1%	1.0%
Other Plastic	1.1%	1.9%	<0.1%	2.0%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	4.7%	9.2%	<0.1%	9.4%
Food Scraps	0.8%	1.5%	<0.1%	1.6%
Wasted Food	1.1%	2.6%	<0.1%	2.4%
Other Organics	2.1%	1.6%	1.3%	2.9%
<b>TOTALS</b>	<b>10.3%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 10 samples

## ICI

**Exhibit 9** provides a summary of the nine material categories that comprise the overall Category 1 MSW disposed by the ICI generating sector in Wisconsin. Data is provided for each category as a percentage of the total weight. As indicated, organic waste composes the largest portion of the waste stream at 26.3 percent, followed by paper at 23.7 percent, and plastic at 18.2 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 9. Overall ICI Statewide Waste Composition



**Table 17** provides a detailed profile of the overall ICI MSW composition by weight that includes the percent contribution of all material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 17. Overall ICI Statewide Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	0.9%	3.7%	0.4%	1.4%
2 High Grade Office Paper	1.6%	2.1%	1.3%	1.8%
3 Magazines/Catalogs	0.7%	1.0%	0.5%	0.8%
4 Uncoated OCC - Recyclable	4.9%	2.1%	4.6%	5.2%
5 Coated OCC	0.2%	<0.1%	<0.1%	<0.1%
6 Boxboard	1.1%	1.1%	0.9%	1.2%
7 Cartons - Aseptic/Gable Top Containers	0.5%	1.5%	0.3%	0.7%
8 Mixed Paper - Recyclable	6.0%	10.9%	4.5%	7.4%
9 Compostable Paper	5.1%	6.3%	4.2%	5.9%
10 Other Paper	2.9%	2.2%	2.7%	3.2%
<b>Total Paper</b>	<b>23.7%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	1.6%	10.6%	0.2%	3.0%
12 Natural HDPE (#2) Bottles	0.4%	0.6%	0.3%	0.4%
13 Colored HDPE (#2) Bottles	0.4%	0.3%	0.3%	0.4%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.4%	0.5%	0.3%	0.4%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	0.2%	0.6%	<0.1%	0.2%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	1.1%	0.8%	1.0%	1.2%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.3%	0.4%	0.3%	0.4%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.4%	1.1%	0.3%	0.6%
21 Rigid Non-Packaging	1.8%	1.8%	1.5%	2.0%
22 Bulky Rigid Plastics	1.0%	2.1%	0.7%	1.3%
23 PE Recyclable Film	0.6%	0.6%	0.5%	0.6%
24 Agricultural Film	0.1%	0.6%	<0.1%	0.2%
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	8.3%	10.7%	6.9%	9.7%
27 PS Foam (#6)	0.7%	0.7%	0.6%	0.8%
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	1.1%	1.7%	0.8%	1.3%
<b>Total Plastic</b>	<b>18.2%</b>			
<b>METAL</b>				
30 Aluminum Beverage Containers	0.6%	0.6%	0.5%	0.7%
31 Other Aluminum	0.4%	0.3%	0.4%	0.5%
32 Ferrous ("Tin") Cans	0.5%	1.2%	0.3%	0.6%
33 Other Ferrous Scrap	1.5%	4.2%	0.9%	2.0%
34 Other Non-Ferrous Scrap	<0.1%	0.2%	<0.1%	<0.1%
35 Other Metal	1.6%	7.9%	0.5%	2.6%
<b>Total Metals</b>	<b>4.6%</b>			

Table 17. Overall Statewide ICI Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	0.6%	0.8%	0.5%	0.7%
37 Colored Containers - Beverage	0.5%	0.8%	0.4%	0.6%
38 Glass Food Containers	0.2%	0.4%	0.2%	0.3%
39 Other Glass	0.9%	0.7%	0.8%	1.0%
<b>Total Glass</b>	<b>2.3%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	0.9%	3.1%	0.4%	1.3%
41 Yard Materials - >6"	0.2%	3.2%	<0.1%	0.6%
42 Food Scraps (Not Traditionally Edible)	4.5%	8.4%	3.4%	5.6%
43 Wasted Food	14.3%	8.9%	13.1%	15.4%
44 Diapers	2.5%	6.6%	1.6%	3.4%
45 Animal Waste/Kitty Litter	1.6%	2.0%	1.3%	1.8%
46 Bottom Fines/Dirt	0.5%	1.8%	0.2%	0.7%
47 Other Organic Material	1.9%	2.4%	1.6%	2.2%
<b>Total Organics</b>	<b>26.3%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.4%	1.0%	0.3%	0.6%
49 Untreated Clean Dimensional Lumber	2.3%	4.9%	1.6%	2.9%
50 Unpainted Engineered Wood	1.6%	4.5%	1.0%	2.1%
51 Painted/Stained Wood	1.6%	0.3%	1.5%	1.6%
52 Other Recyclable Wood	0.5%	<0.1%	<0.1%	<0.1%
53 Rock, Concrete, Brick	<0.1%	<0.1%	<0.1%	<0.1%
54 Gypsum Wallboard - Demo	1.1%	9.7%	<0.1%	2.4%
55 Gypsum Wallboard - Clean Scrap	0.4%	<0.1%	<0.1%	<0.1%
56 Roofing Shingles	<0.1%	<0.1%	<0.1%	<0.1%
57 PVC	<0.1%	0.2%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	0.2%	1.7%	<0.1%	0.4%
59 Other CDD	1.3%	6.7%	0.4%	2.2%
<b>Total Construction &amp; Demolition</b>	<b>9.5%</b>			

Table 17. Overall Statewide ICI Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	0.3%	2.5%	<0.1%	0.7%
63 Non-Banned Electronic Equipment	0.3%	0.6%	0.3%	0.4%
64 Small Electrical Appliances	0.5%	1.7%	0.3%	0.7%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	1.3%	<0.1%	0.2%
68 Other Batteries	<0.1%	0.1%	<0.1%	<0.1%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	0.4%	2.3%	<0.1%	0.7%
72 Paint	0.1%	0.3%	<0.1%	0.2%
73 Automotive Used Oil/Filters	<0.1%	0.6%	<0.1%	0.1%
74 Household Hazardous Waste	<0.1%	0.4%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	<0.1%	0.2%	<0.1%	<0.1%
76 Other Problem Materials	1.6%	1.2%	1.4%	1.7%
<b>Total Problem Materials</b>	<b>3.5%</b>			
<b>OTHER WASTE</b>				
77 Textiles	4.5%	5.8%	3.7%	5.2%
78 Carpet	1.3%	8.6%	0.1%	2.4%
79 Carpet Padding	0.2%	1.7%	<0.1%	0.4%
80 Wood Pallets	0.4%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	0.7%	5.7%	<0.1%	1.4%
84 Aerosol Cans	0.1%	0.2%	0.1%	0.1%
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>7.2%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	0.6%	1.6%	0.3%	0.8%
Other Plastic	0.3%	0.9%	0.2%	0.4%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	2.0%	3.0%	1.6%	2.4%
Food Scraps	0.3%	<0.1%	<0.1%	<0.1%
Wasted Food	0.3%	<0.1%	<0.1%	<0.1%
Other Organics	1.2%	1.4%	1.0%	1.4%
<b>TOTALS</b>	<b>4.7%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

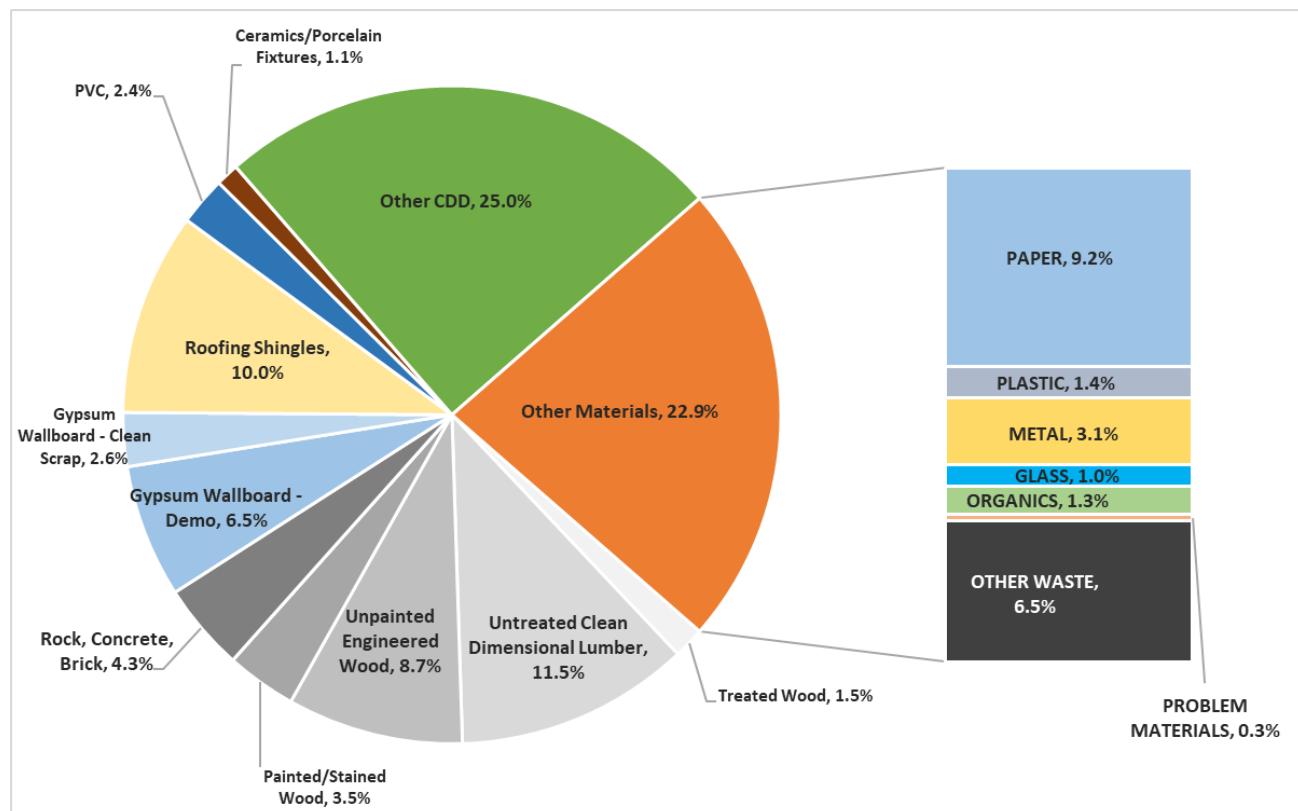
Note: Composition based on 157 samples

## Category 25 Construction and Demolition Debris (CDD)

**Exhibit 10** provides a summary of the nine material categories that comprise the overall Category 25 CDD disposed in Wisconsin. Data is provided for each category as a percentage of the total by weight. CDD comprises 77.1 percent of the waste stream while non-CDD materials comprise 22.9 percent. The following materials components comprise the largest portion of the CDD material stream:

- Other CDD – 25.0 percent
- Untreated Clean Dimensional Lumber – 11.5 percent
- Roofing Shingles – 10.0 percent
- Unpainted Engineered Wood – 8.7 percent.

Exhibit 10. Overall CDD Statewide Waste Composition



**Table 18** provides a detailed profile of the overall CDD composition that includes the percent contribution of all material components. For each material component, the mean percent is included. Standard statistical analysis of CDD materials is not provided due to the significant variation in the size and types of loads visually characterized as part of this portion of the Study. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 18. Overall CDD Statewide Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>PAPER</b>		
Newsprint (ONP)	0	<0.1%
High Grade Office Paper	0	<0.1%
Magazines/Catalogs	0	<0.1%
Uncoated OCC - Recyclable	14,700	3.4%
Coated OCC	400	<0.1%
Boxboard	21,300	4.9%
Cartons - Aseptic/Gable Top Containers	200	<0.1%
Mixed Paper - Recyclable	1,300	0.3%
Compostable Paper	0	<0.1%
Other Paper	2,200	0.5%
<b>Total Paper</b>	<b>40,000</b>	<b>9.2%</b>
<b>PLASTIC</b>		
PET (#1) Bottles	0	<0.1%
Natural HDPE (#2) Bottles	0	<0.1%
Colored HDPE (#2) Bottles	0	<0.1%
PP (#5) Bottles	0	<0.1%
Other (#3, #4, #6, and #7) Bottles	0	<0.1%
PET(#1) Non-Bottle Rigid Containers &	0	<0.1%
HDPE (#2) Non-Bottle Rigid Containers	0	<0.1%
PP(#5) Non-Bottle Rigid Containers &	0	<0.1%
PS(#6) Non-Foam, Bottle Rigid	0	<0.1%
Other (#7)/Unidentifiable Non-Bottle	0	<0.1%
Rigid Non-Packaging	100	<0.1%
Bulky Rigid Plastics	500	0.1%
PE Recyclable Film	0	<0.1%
Agricultural Film	0	<0.1%
Pouches	0	<0.1%
Other Flexible Films	3,000	0.7%
PS Foam (#6)	500	0.1%
Compostable Plastics	0	<0.1%
Other Plastics	2,000	0.5%
<b>Total Plastic</b>	<b>6,200</b>	<b>1.4%</b>

Table 18. Overall CDD Statewide Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>METAL</b>		
Aluminum Beverage Containers	0	<0.1%
Other Aluminum	700	0.2%
Ferrous ("Tin") Cans	0	<0.1%
Other Ferrous Scrap	7,200	1.7%
Other Non-Ferrous Scrap	400	<0.1%
Other Metal	5,100	1.2%
<b>Total Metals</b>	<b>13,400</b>	<b>3.1%</b>
<b>GLASS</b>		
Clear Containers - Beverage	0	<0.1%
Colored Containers - Beverage	0	<0.1%
Glass Food Containers	0	<0.1%
Other Glass	4,400	1.0%
<b>Total Glass</b>	<b>4,400</b>	<b>1.0%</b>
<b>ORGANICS</b>		
Yard Materials - <6"	500	0.1%
Yard Materials - >6"	700	0.2%
Food Scraps (Not Traditionally Edible)	0	<0.1%
Wasted Food	0	<0.1%
Diapers	0	<0.1%
Animal Waste/Kitty Litter	0	<0.1%
Bottom Fines/Dirt	3,200	0.7%
Other Organic Material	1,300	0.3%
<b>Total Organics</b>	<b>5,700</b>	<b>1.3%</b>

Table 18. Overall CDD Statewide Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>CONSTRUCTION &amp; DEMOLITION</b>		
Treated Wood	6,600	1.5%
Untreated Clean Dimensional Lumber	50,000	11.5%
Unpainted Engineered Wood	37,600	8.7%
Painted/Stained Wood	15,000	3.5%
Other Recyclable Wood	0	<0.1%
Rock, Concrete, Brick	18,700	4.3%
Gypsum Wallboard - Demo	28,400	6.5%
Gypsum Wallboard - Clean Scrap	11,400	2.6%
Roofing Shingles	43,200	10.0%
PVC	10,300	2.4%
Ceramics/Porcelain Fixtures	4,900	1.1%
Other CDD	108,300	25.0%
<b>Total Construction &amp; Demolition</b>	<b>334,400</b>	<b>77.1%</b>
<b>PROBLEM MATERIALS</b>		
Televisions - CRT	0	<0.1%
Televisions - Non-CRT	0	<0.1%
Other Banned Electronic Equipment	0	<0.1%
Non-Banned Electronic Equipment	0	<0.1%
Small Electrical Appliances	100	<0.1%
White Goods - Refridgerated	0	<0.1%
White Goods - Non-Refridgerated	100	<0.1%
Lead Acid Batteries	0	<0.1%
Other Batteries	0	<0.1%
Fluorescent Light Tubes	0	<0.1%
Compact Fluorescent Light Bulbs	0	<0.1%
Tires	300	<0.1%
Paint	600	0.1%
Automotive Used Oil/Filters	0	<0.1%
Household Hazardous Waste	0	<0.1%
Sharps, Needles, Lancets	0	<0.1%
Other Problem Materials	200	<0.1%
<b>Total Problem Materials</b>	<b>1,300</b>	<b>0.3%</b>

Table 18. Overall CDD Statewide Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>OTHER WASTE</b>		
Textiles	200	<0.1%
Carpet	2,400	0.6%
Carpet Padding	700	0.2%
Wood Pallets	23,000	5.3%
Bulky Items	700	0.2%
Mattresses and Box Springs	200	<0.1%
Wood Furniture	900	0.2%
Aerosol Cans	0	<0.1%
Compressed Gas Containers	0	<0.1%
<b>Total Other Waste</b>	<b>28,100</b>	<b>6.5%</b>
<b>TOTALS</b>	<b>433,500</b>	<b>100.0%</b>

Note: Composition based on 659 samples

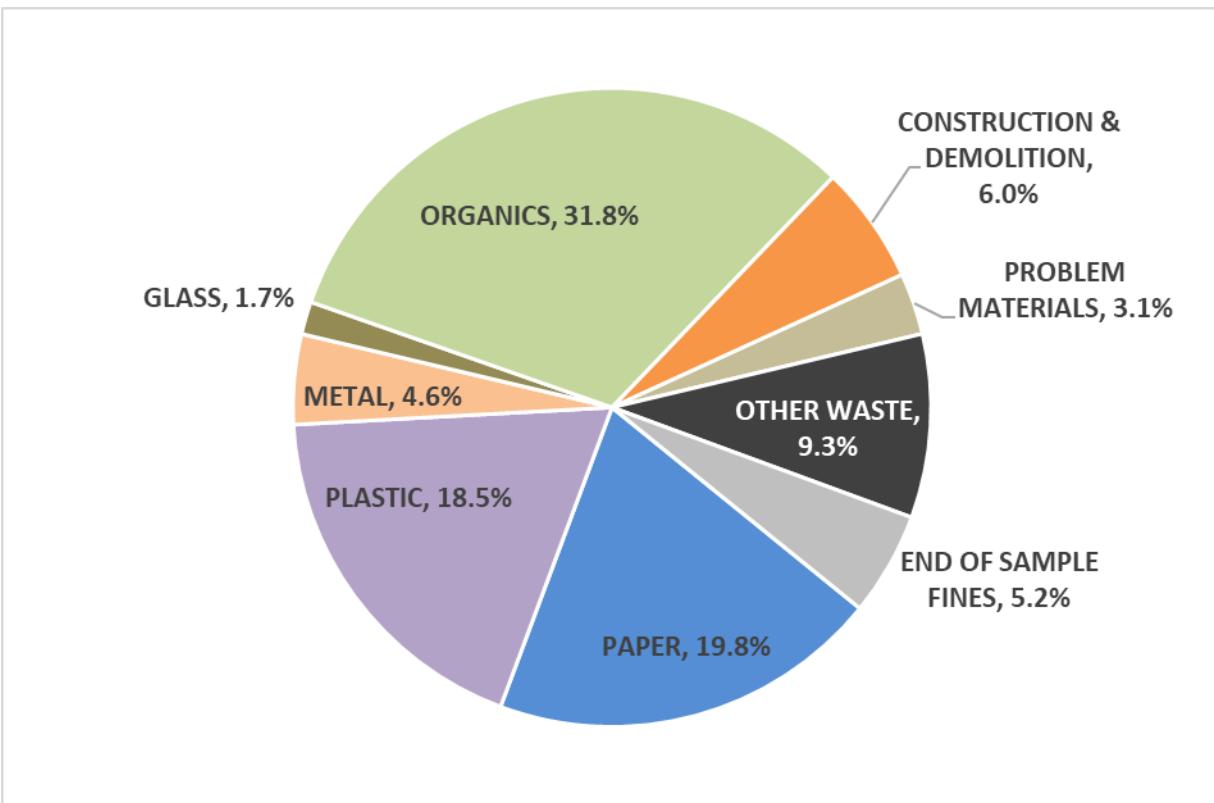
## NORTHEAST REGION WASTE COMPOSITION

### Category 1 MSW

#### Overall

**Exhibit 11** provides a summary of the nine material categories that compose the overall Category 1 MSW disposed WDNR's Northeast region. Data is provided for each category as a percentage of the total weight. Note that the overall Northeast region waste composition includes waste from the Single family residential, multi-family, and ICI waste generating sectors only. CDD composition is presented separately. As indicated, organic waste composes the largest portion of the waste stream at 31.8 percent, followed by paper at 19.8 percent, and plastic at 18.5 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 11. Overall Northeast Region Waste Composition



**Table 19** provides the detailed breakdown of the composition by weight for all material components measured as part of this Study. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 19. Overall Northeast Region Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>					
1 Newsprint (ONP)	6,100	0.6%	1.4%	0.4%	0.9%
2 High Grade Office Paper	16,600	1.8%	1.9%	1.4%	2.1%
3 Magazines/Catalogs	7,100	0.8%	1.1%	0.5%	1.0%
4 Uncoated OCC - Recyclable	15,600	1.7%	1.6%	1.3%	2.0%
5 Coated OCC	100	<0.1%	<0.1%	<0.1%	<0.1%
6 Boxboard	9,600	1.0%	1.0%	0.8%	1.2%
7 Cartons - Aseptic/Gable Top Containers	4,500	0.5%	1.0%	0.3%	0.7%
8 Mixed Paper - Recyclable	39,500	4.2%	7.7%	2.7%	5.7%
9 Compostable Paper	61,000	6.5%	4.3%	5.6%	7.3%
10 Other Paper	26,400	2.8%	2.0%	2.4%	3.2%
<b>Total Paper</b>	<b>186,500</b>	<b>19.8%</b>			
<b>PLASTIC</b>					
11 PET (#1) Bottles	20,200	2.2%	6.8%	0.8%	3.5%
12 Natural HDPE (#2) Bottles	2,300	0.2%	0.4%	0.2%	0.3%
13 Colored HDPE (#2) Bottles	3,500	0.4%	0.4%	0.3%	0.5%
14 PP (#5) Bottles	0	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	200	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	3,500	0.4%	0.4%	0.3%	0.4%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	1,700	0.2%	0.4%	<0.1%	0.3%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	9,600	1.0%	0.7%	0.9%	1.2%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	2,700	0.3%	0.3%	0.2%	0.3%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	6,700	0.7%	0.9%	0.5%	0.9%
21 Rigid Non-Packaging	13,300	1.4%	1.6%	1.1%	1.7%
22 Bulky Rigid Plastics	5,700	0.6%	1.6%	0.3%	0.9%
23 PE Recyclable Film	7,800	0.8%	0.6%	0.7%	0.9%
24 Agricultural Film	1,500	0.2%	0.5%	<0.1%	0.3%
25 Pouches	300	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	79,100	8.4%	7.2%	7.0%	9.8%
27 PS Foam (#6)	7,700	0.8%	0.9%	0.6%	1.0%
28 Compostable Plastics	0	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	7,600	0.8%	1.1%	0.6%	1.0%
<b>Total Plastic</b>	<b>173,400</b>	<b>18.5%</b>			

Table 19. Overall Northeast Region Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>					
36 Clear Containers - Beverage	3,800	0.4%	0.6%	0.3%	0.5%
37 Colored Containers - Beverage	4,300	0.5%	0.9%	0.3%	0.6%
38 Glass Food Containers	3,000	0.3%	0.5%	0.2%	0.4%
39 Other Glass	4,400	0.5%	0.8%	0.3%	0.6%
<b>Total Glass</b>	<b>15,500</b>	<b>1.7%</b>			
<b>ORGANICS</b>					
40 Yard Materials - <6"	22,500	2.4%	4.9%	1.4%	3.4%
41 Yard Materials - >6"	4,800	0.5%	2.7%	<0.1%	1.0%
42 Food Scraps (Not Traditionally Edible)	64,300	6.8%	7.2%	5.4%	8.3%
43 Wasted Food	128,500	13.7%	9.4%	11.8%	15.5%
44 Diapers	39,100	4.2%	4.9%	3.2%	5.1%
45 Animal Waste/Kitty Litter	16,100	1.7%	2.6%	1.2%	2.2%
46 Bottom Fines/Dirt	5,600	0.6%	2.2%	0.2%	1.0%
47 Other Organic Material	18,000	1.9%	2.8%	1.4%	2.5%
<b>Total Organics</b>	<b>298,900</b>	<b>31.8%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>					
48 Treated Wood	3,600	0.4%	1.0%	0.2%	0.6%
49 Untreated Clean Dimensional Lumber	12,400	1.3%	3.5%	0.6%	2.0%
50 Unpainted Engineered Wood	7,900	0.8%	3.0%	0.2%	1.4%
51 Painted/Stained Wood	1,600	0.2%	0.5%	<0.1%	0.3%
52 Other Recyclable Wood	900	<0.1%	0.8%	<0.1%	0.3%
53 Rock, Concrete, Brick	600	<0.1%	0.4%	<0.1%	0.1%
54 Gypsum Wallboard - Demo	7,400	0.8%	6.2%	<0.1%	2.0%
55 Gypsum Wallboard - Clean Scrap	0	<0.1%	<0.1%	<0.1%	<0.1%
56 Roofing Shingles	900	<0.1%	0.6%	<0.1%	0.2%
57 PVC	500	<0.1%	0.2%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	1,600	0.2%	1.1%	<0.1%	0.4%
59 Other CDD	18,800	2.0%	4.6%	1.1%	2.9%
<b>Total Construction &amp; Demolition</b>	<b>56,200</b>	<b>6.0%</b>			

Table 19. Overall Northeast Region Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

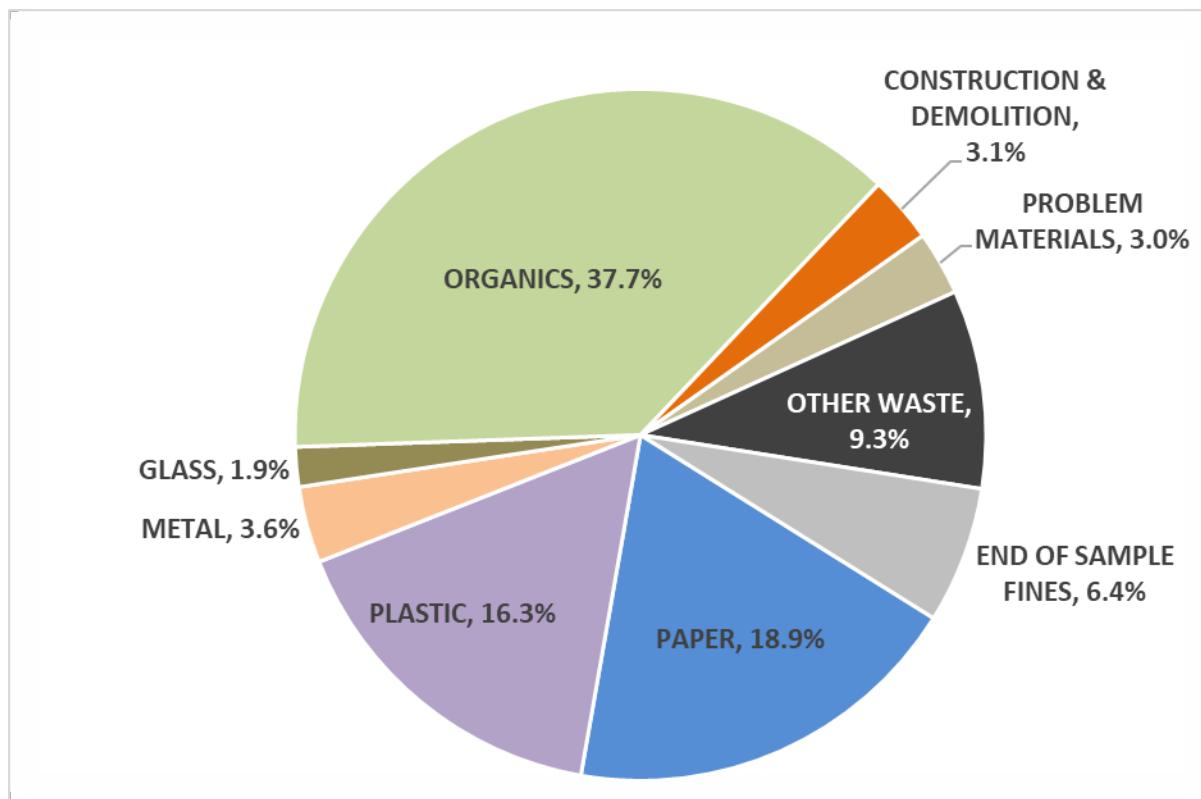
Material Components	2020 Tons	Mean Composition	Standard Deviation	90% Confidence Limits Lower	90% Confidence Limits Upper
<b>PROBLEM MATERIALS</b>					
60 Televisions - CRT	0	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	0	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	7,400	0.8%	2.2%	0.4%	1.2%
63 Non-Banned Electronic Equipment	2,500	0.3%	1.3%	<0.1%	0.5%
64 Small Electrical Appliances	6,900	0.7%	1.7%	0.4%	1.1%
65 White Goods - Refridgerated	0	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	0	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	1,200	0.1%	0.9%	<0.1%	0.3%
68 Other Batteries	1,500	0.2%	0.2%	0.1%	0.2%
69 Fluorescent Light Tubes	0	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	300	<0.1%	0.2%	<0.1%	<0.1%
71 Tires	2,200	0.2%	1.5%	<0.1%	0.5%
72 Paint	2,900	0.3%	2.4%	<0.1%	0.8%
73 Automotive Used Oil/Filters	800	<0.1%	0.4%	<0.1%	0.2%
74 Household Hazardous Waste	300	<0.1%	0.2%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	1,100	0.1%	0.4%	<0.1%	0.2%
76 Other Problem Materials	2,000	0.2%	0.9%	<0.1%	0.4%
<b>Total Problem Materials</b>	<b>29,100</b>	<b>3.1%</b>			
<b>OTHER WASTE</b>					
77 Textiles	54,100	5.8%	6.1%	4.5%	7.0%
78 Carpet	19,000	2.0%	5.8%	0.9%	3.2%
79 Carpet Padding	1,900	0.2%	1.1%	<0.1%	0.4%
80 Wood Pallets	0	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	0	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	0	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	10,000	1.1%	4.3%	0.2%	1.9%
84 Aerosol Cans	1,900	0.2%	0.4%	0.1%	0.3%
85 Compressed Gas Containers	500	<0.1%	0.3%	<0.1%	0.1%
<b>Total Other Waste</b>	<b>87,400</b>	<b>9.3%</b>			
<b>END OF SAMPLE FINES</b>					
Other Paper	8,900	0.9%	1.3%	0.7%	1.2%
Other Plastic	8,100	0.9%	1.3%	0.6%	1.1%
Other Glass	0	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	12,400	1.3%	2.3%	0.9%	1.8%
Food Scraps	0	<0.1%	<0.1%	<0.1%	<0.1%
Wasted Food	0	<0.1%	<0.1%	<0.1%	<0.1%
Other Organics	19,800	2.1%	2.2%	1.7%	2.5%
<b>TOTALS</b>	<b>49,200</b>	<b>5.2%</b>			
<b>TOTALS</b>	<b>938,900</b>	<b>100.0%</b>			

Note: Composition based on 69 samples

### Single Family Residential

**Exhibit 12** provides a summary of the nine material categories that comprise the Category 1 MSW disposed in the Northeast region. Data is provided for each category as a percentage of the total. As indicated, organic waste composes the largest portion of the waste stream at 37.7 percent, followed by paper at 18.9 percent, and plastic at 16.3 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 12. Northeast Region Single family residential Waste Composition



**Table 20** provides a detailed profile of the MSW Single family residential composition from the Northeast region that includes the percent contribution of all material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 20. Northeast Region Single Family Residential Waste Composition – Detailed  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	0.6%	1.2%	0.3%	0.9%
2 High Grade Office Paper	2.0%	1.7%	1.6%	2.5%
3 Magazines/Catalogs	0.8%	1.2%	0.5%	1.1%
4 Uncoated OCC - Recyclable	1.2%	0.7%	1.0%	1.4%
5 Coated OCC	<0.1%	0.1%	<0.1%	<0.1%
6 Boxboard	1.1%	0.9%	0.9%	1.3%
7 Cartons - Aseptic/Gable Top Containers	0.4%	0.6%	0.3%	0.6%
8 Mixed Paper - Recyclable	3.2%	1.7%	2.7%	3.6%
9 Compostable Paper	6.2%	2.0%	5.7%	6.7%
10 Other Paper	3.3%	1.7%	2.9%	3.8%
<b>Total Paper</b>	<b>18.9%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	1.5%	1.3%	1.1%	1.8%
12 Natural HDPE (#2) Bottles	0.1%	0.1%	0.1%	0.2%
13 Colored HDPE (#2) Bottles	0.5%	0.4%	0.3%	0.6%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.4%	0.3%	0.3%	0.5%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	0.2%	0.4%	<0.1%	0.3%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	1.1%	0.6%	1.0%	1.3%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.3%	0.2%	0.2%	0.3%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.8%	0.6%	0.6%	1.0%
21 Rigid Non-Packaging	1.3%	1.3%	1.0%	1.7%
22 Bulky Rigid Plastics	0.5%	1.1%	0.2%	0.8%
23 PE Recyclable Film	1.0%	0.6%	0.9%	1.2%
24 Agricultural Film	0.1%	0.5%	<0.1%	0.3%
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	6.8%	2.2%	6.2%	7.3%
27 PS Foam (#6)	1.0%	1.1%	0.7%	1.2%
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	0.7%	0.6%	0.5%	0.8%
<b>Total Plastic</b>	<b>16.3%</b>			

Table 20. Northeast Region Single Family Residential Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	0.5%	0.5%	0.4%	0.6%
37 Colored Containers - Beverage	0.5%	1.0%	0.2%	0.7%
38 Glass Food Containers	0.4%	0.6%	0.2%	0.5%
39 Other Glass	0.5%	0.9%	0.3%	0.8%
<b>Total Glass</b>	<b>1.9%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	3.2%	5.8%	1.7%	4.7%
41 Yard Materials - >6"	0.4%	2.3%	<0.1%	1.0%
42 Food Scraps (Not Traditionally Edible)	8.3%	6.0%	6.7%	9.8%
43 Wasted Food	16.4%	8.8%	14.1%	18.7%
44 Diapers	4.4%	3.4%	3.5%	5.3%
45 Animal Waste/Kitty Litter	2.3%	2.8%	1.5%	3.0%
46 Bottom Fines/Dirt	0.7%	2.4%	<0.1%	1.3%
47 Other Organic Material	2.1%	3.1%	1.3%	2.9%
<b>Total Organics</b>	<b>37.7%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.4%	1.0%	0.2%	0.7%
49 Untreated Clean Dimensional Lumber	0.4%	1.5%	<0.1%	0.8%
50 Unpainted Engineered Wood	0.2%	0.6%	<0.1%	0.4%
51 Painted/Stained Wood	0.3%	0.6%	<0.1%	0.4%
52 Other Recyclable Wood	0.2%	1.1%	<0.1%	0.4%
53 Rock, Concrete, Brick	0.1%	0.5%	<0.1%	0.2%
54 Gypsum Wallboard - Demo	<0.1%	0.3%	<0.1%	0.2%
55 Gypsum Wallboard - Clean Scrap	<0.1%	<0.1%	<0.1%	<0.1%
56 Roofing Shingles	0.2%	0.7%	<0.1%	0.4%
57 PVC	<0.1%	0.2%	<0.1%	0.1%
58 Ceramics/Porcelain Fixtures	<0.1%	0.4%	<0.1%	0.1%
59 Other CDD	1.1%	2.0%	0.6%	1.6%
<b>Total Construction &amp; Demolition</b>	<b>3.1%</b>			

Table 20. Northeast Region Single Family Residential Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	0.8%	2.0%	0.3%	1.3%
63 Non-Banned Electronic Equipment	0.3%	1.6%	<0.1%	0.8%
64 Small Electrical Appliances	0.8%	1.7%	0.3%	1.2%
65 White Goods - Refrigerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refrigerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	0.3%	<0.1%	0.1%
68 Other Batteries	0.2%	0.3%	0.2%	0.3%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	0.2%	<0.1%	0.1%
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	0.5%	3.1%	<0.1%	1.3%
73 Automotive Used Oil/Filters	<0.1%	0.2%	<0.1%	0.1%
74 Household Hazardous Waste	<0.1%	<0.1%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	0.2%	0.5%	<0.1%	0.3%
76 Other Problem Materials	<0.1%	0.3%	<0.1%	0.2%
<b>Total Problem Materials</b>	<b>3.0%</b>			
<b>OTHER WASTE</b>				
77 Textiles	7.1%	6.2%	5.5%	8.7%
78 Carpet	1.0%	2.3%	0.4%	1.6%
79 Carpet Padding	0.1%	0.5%	<0.1%	0.3%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	0.7%	3.1%	<0.1%	1.5%
84 Aerosol Cans	0.3%	0.4%	0.2%	0.4%
85 Compressed Gas Containers	<0.1%	0.4%	<0.1%	0.2%
<b>Total Other Waste</b>	<b>9.3%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	1.1%	1.0%	0.8%	1.3%
Other Plastic	1.1%	1.5%	0.7%	1.5%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	1.4%	1.5%	1.0%	1.8%
Food Scraps	<0.1%	<0.1%	<0.1%	<0.1%
Wasted Food	<0.1%	<0.1%	<0.1%	<0.1%
Other Organics	2.9%	2.4%	2.2%	3.5%
<b>TOTALS</b>	<b>6.4%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 40 samples

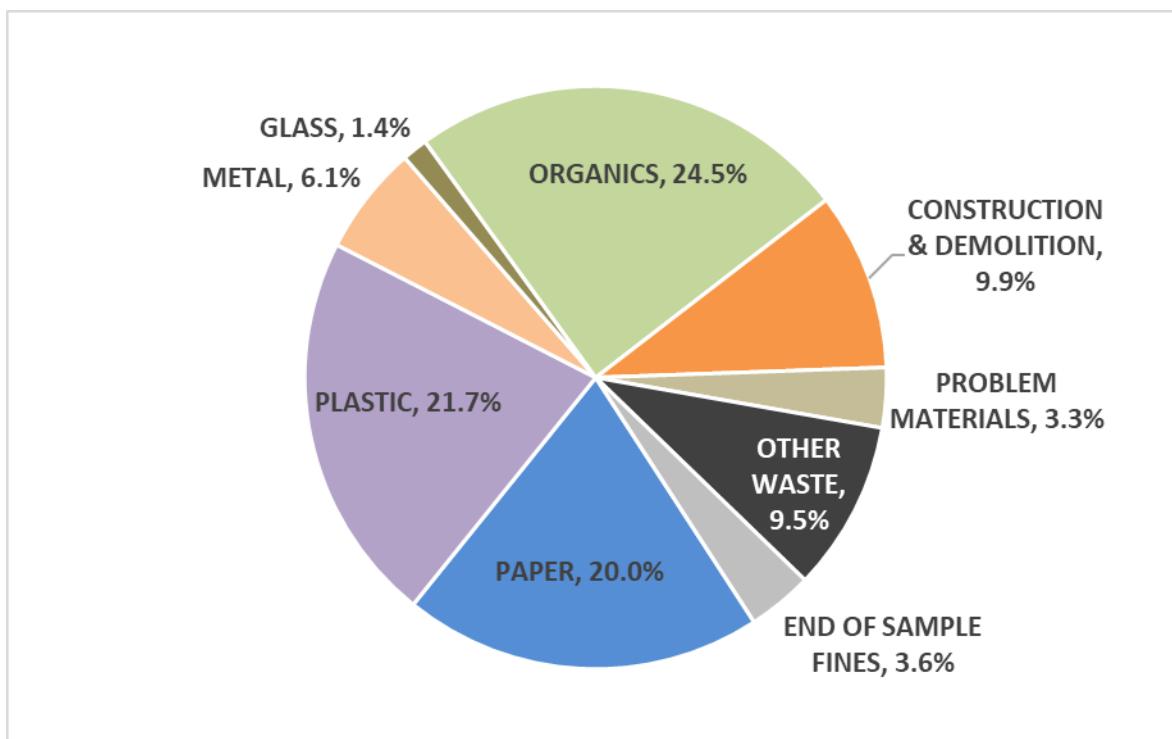
## **Multi-Family**

No pure loads of multi-family waste were obtained and sorted from the Northeast region.

## **ICI**

**Exhibit 13** provides a summary of the nine material categories that comprise the Category 1 MSW disposed by the ICI generating sector in the Northeast region. Data is provided for each category as a percentage of the total. As indicated, organic waste composes the largest portion of the waste stream at 24.5 percent, followed by plastic at 21.7 percent, and paper at 20.0 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 13. Northeast Region ICI Waste Composition



**Table 21** provides a detailed profile of the ICI MSW composition for the Northeast region that includes the percent contribution of all material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 21. Northeast Region ICI Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Lower</b>	<b>90% Confidence Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	0.5%	1.2%	0.1%	0.9%
2 High Grade Office Paper	1.4%	2.1%	0.8%	2.1%
3 Magazines/Catalogs	0.7%	1.0%	0.4%	1.0%
4 Uncoated OCC - Recyclable	2.2%	2.1%	1.6%	2.9%
5 Coated OCC	<0.1%	<0.1%	<0.1%	<0.1%
6 Boxboard	0.9%	1.1%	0.6%	1.2%
7 Cartons - Aseptic/Gable Top Containers	0.6%	1.5%	0.1%	1.0%
8 Mixed Paper - Recyclable	4.8%	10.9%	1.4%	8.2%
9 Compostable Paper	6.8%	6.3%	4.8%	8.8%
10 Other Paper	2.1%	2.2%	1.4%	2.8%
<b>Total Paper</b>	<b>20.0%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	3.2%	10.6%	<0.1%	6.5%
12 Natural HDPE (#2) Bottles	0.4%	0.6%	0.2%	0.6%
13 Colored HDPE (#2) Bottles	0.3%	0.3%	0.2%	0.3%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.4%	0.5%	0.2%	0.5%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	0.2%	0.6%	<0.1%	0.4%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	0.9%	0.8%	0.6%	1.2%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.3%	0.4%	0.2%	0.4%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.6%	1.1%	0.2%	0.9%
21 Rigid Non-Packaging	1.5%	1.8%	0.9%	2.1%
22 Bulky Rigid Plastics	0.8%	2.1%	0.2%	1.4%
23 PE Recyclable Film	0.6%	0.6%	0.4%	0.7%
24 Agricultural Film	0.2%	0.6%	<0.1%	0.3%
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	10.8%	10.7%	7.5%	14.1%
27 PS Foam (#6)	0.6%	0.7%	0.4%	0.8%
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	1.0%	1.7%	0.5%	1.5%
<b>Total Plastic</b>	<b>21.7%</b>			

Table 21. Northeast Region ICI Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	0.3%	0.8%	<0.1%	0.5%
37 Colored Containers - Beverage	0.5%	0.8%	0.2%	0.7%
38 Glass Food Containers	0.3%	0.4%	0.1%	0.4%
39 Other Glass	0.4%	0.7%	0.2%	0.6%
<b>Total Glass</b>	<b>1.4%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	1.4%	3.1%	0.4%	2.3%
41 Yard Materials - >6"	0.7%	3.2%	<0.1%	1.7%
42 Food Scraps (Not Traditionally Edible)	5.0%	8.4%	2.4%	7.7%
43 Wasted Food	10.2%	8.9%	7.4%	13.0%
44 Diapers	4.0%	6.6%	2.0%	6.1%
45 Animal Waste/Kitty Litter	1.0%	2.0%	0.3%	1.6%
46 Bottom Fines/Dirt	0.5%	1.8%	<0.1%	1.1%
47 Other Organic Material	1.7%	2.4%	1.0%	2.5%
<b>Total Organics</b>	<b>24.5%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.3%	1.0%	<0.1%	0.7%
49 Untreated Clean Dimensional Lumber	2.6%	4.9%	1.0%	4.1%
50 Unpainted Engineered Wood	1.6%	4.5%	0.2%	3.0%
51 Painted/Stained Wood	<0.1%	0.3%	<0.1%	0.1%
52 Other Recyclable Wood	<0.1%	<0.1%	<0.1%	<0.1%
53 Rock, Concrete, Brick	<0.1%	<0.1%	<0.1%	<0.1%
54 Gypsum Wallboard - Demo	1.8%	9.7%	<0.1%	4.8%
55 Gypsum Wallboard - Clean Scrap	<0.1%	<0.1%	<0.1%	<0.1%
56 Roofing Shingles	<0.1%	<0.1%	<0.1%	<0.1%
57 PVC	<0.1%	0.2%	<0.1%	0.1%
58 Ceramics/Porcelain Fixtures	0.3%	1.7%	<0.1%	0.9%
59 Other CDD	3.1%	6.7%	1.0%	5.2%
<b>Total Construction &amp; Demolition</b>	<b>9.9%</b>			

Table 21. Northeast Region ICI Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	0.9%	2.5%	<0.1%	1.6%
63 Non-Banned Electronic Equipment	0.2%	0.6%	<0.1%	0.4%
64 Small Electrical Appliances	0.7%	1.7%	0.2%	1.3%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	0.3%	1.3%	<0.1%	0.7%
68 Other Batteries	<0.1%	0.1%	<0.1%	<0.1%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	0.6%	2.3%	<0.1%	1.3%
72 Paint	<0.1%	0.3%	<0.1%	0.1%
73 Automotive Used Oil/Filters	0.1%	0.6%	<0.1%	0.3%
74 Household Hazardous Waste	<0.1%	0.4%	<0.1%	0.2%
75 Sharps, Needles, Lancets	<0.1%	0.2%	<0.1%	0.1%
76 Other Problem Materials	0.3%	1.2%	<0.1%	0.7%
<b>Total Problem Materials</b>	<b>3.3%</b>			
<b>OTHER WASTE</b>				
77 Textiles	3.8%	5.8%	2.0%	5.6%
78 Carpet	3.5%	8.6%	0.9%	6.2%
79 Carpet Padding	0.3%	1.7%	<0.1%	0.8%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	1.7%	5.7%	<0.1%	3.4%
84 Aerosol Cans	0.1%	0.2%	<0.1%	0.2%
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>9.5%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	0.8%	1.6%	0.3%	1.3%
Other Plastic	0.5%	0.9%	0.3%	0.8%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	1.1%	3.0%	0.2%	2.1%
Food Scraps	<0.1%	<0.1%	<0.1%	<0.1%
Wasted Food	<0.1%	<0.1%	<0.1%	<0.1%
Other Organics	1.1%	1.4%	0.7%	1.5%
<b>TOTALS</b>	<b>3.6%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 28 samples

## Category 25 Construction and Demolition Debris (CDD)

Exhibit 14 provides a summary of the nine material categories that comprise the Category 25 CDD disposed in the Northeast region. Data is provided for each category as a percentage of the total. CDD comprises 89 percent of the waste stream while non-CDD materials comprise 11 percent. The following materials comprise the largest portion of the CDD material stream:

- Other CDD – 20.0 percent
- Untreated Clean Dimensional Lumber – 15.3 percent
- Roofing Shingles – 15.2 percent
- Unpainted Engineered Wood – 14.2 percent
- Gypsum Wallboard – Demo – 12.4 percent.

Exhibit 14. Northeast Region CDD Statewide Waste Composition

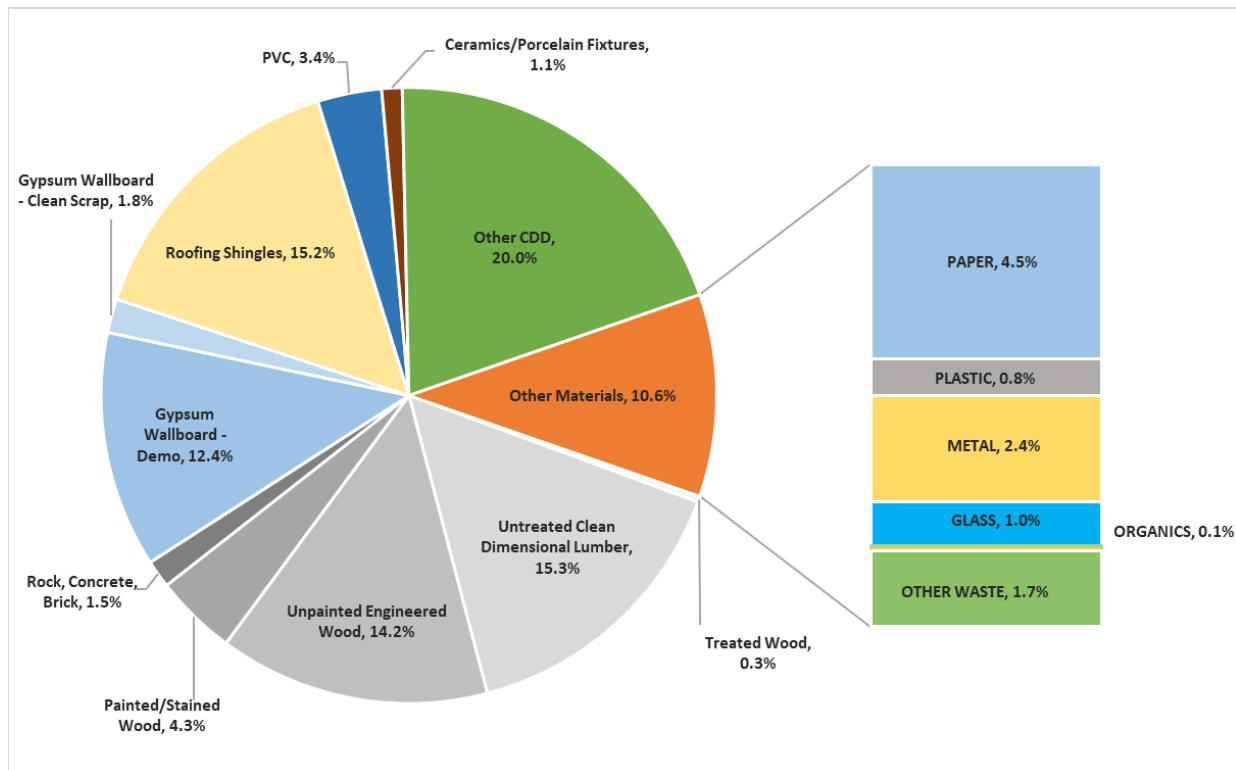


Table 22 provides a detailed profile of the Northeast region CDD composition that includes the percent contribution of all material components. For each material component, the mean percent is included. Standard statistical analysis of CDD materials is not provided due to the significant variation in the size and types of loads visually characterized as part of this portion of the Study. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 22. Northeast Region CDD Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>PAPER</b>		
Newsprint (ONP)	0	<0.1%
High Grade Office Paper	0	<0.1%
Magazines/Catalogs	0	<0.1%
Uncoated OCC - Recyclable	2,000	2.3%
Coated OCC	0	<0.1%
Boxboard	0	<0.1%
Cartons - Aseptic/Gable Top Containers	100	0.2%
Mixed Paper - Recyclable	0	<0.1%
Compostable Paper	0	<0.1%
Other Paper	1,600	1.9%
<b>Total Paper</b>	<b>3,800</b>	<b>4.5%</b>
<b>PLASTIC</b>		
PET (#1) Bottles	0	<0.1%
Natural HDPE (#2) Bottles	0	<0.1%
Colored HDPE (#2) Bottles	0	<0.1%
PP (#5) Bottles	0	<0.1%
Other (#3, #4, #6, and #7) Bottles	0	<0.1%
PET(#1) Non-Bottle Rigid Containers &	0	<0.1%
HDPE (#2) Non-Bottle Rigid Containers	0	<0.1%
PP(#5) Non-Bottle Rigid Containers &	0	<0.1%
PS(#6) Non-Foam, Bottle Rigid	0	<0.1%
Other (#7)/Unidentifiable Non-Bottle	0	<0.1%
Rigid Non-Packaging	0	<0.1%
Bulky Rigid Plastics	100	<0.1%
PE Recyclable Film	0	<0.1%
Agricultural Film	0	<0.1%
Pouches	0	<0.1%
Other Flexible Films	200	0.3%
PS Foam (#6)	100	<0.1%
Compostable Plastics	0	<0.1%
Other Plastics	300	0.4%
<b>Total Plastic</b>	<b>700</b>	<b>0.8%</b>

Table 22. Northeast Region CDD Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>METAL</b>		
Aluminum Beverage Containers	0	<0.1%
Other Aluminum	200	0.2%
Ferrous ("Tin") Cans	0	<0.1%
Other Ferrous Scrap	200	0.3%
Other Non-Ferrous Scrap	0	<0.1%
Other Metal	1,700	2.0%
<b>Total Metals</b>	<b>2,100</b>	<b>2.4%</b>
<b>GLASS</b>		
Clear Containers - Beverage	0	<0.1%
Colored Containers - Beverage	0	<0.1%
Glass Food Containers	0	<0.1%
Other Glass	800	1.0%
<b>Total Glass</b>	<b>800</b>	<b>1.0%</b>
<b>ORGANICS</b>		
Yard Materials - <6"	0	<0.1%
Yard Materials - >6"	0	<0.1%
Food Scraps (Not Traditionally Edible)	0	<0.1%
Wasted Food	0	<0.1%
Diapers	0	<0.1%
Animal Waste/Kitty Litter	0	<0.1%
Bottom Fines/Dirt	100	0.1%
Other Organic Material	0	<0.1%
<b>Total Organics</b>	<b>100</b>	<b>0.1%</b>

Table 22. Northeast Region CDD Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>CONSTRUCTION &amp; DEMOLITION</b>		
Treated Wood	300	0.3%
Untreated Clean Dimensional Lumber	13,000	15.3%
Unpainted Engineered Wood	12,100	14.2%
Painted/Stained Wood	3,700	4.3%
Other Recyclable Wood	0	<0.1%
Rock, Concrete, Brick	1,200	1.5%
Gypsum Wallboard - Demo	10,500	12.4%
Gypsum Wallboard - Clean Scrap	1,500	1.8%
Roofing Shingles	12,900	15.2%
PVC	2,900	3.4%
Ceramics/Porcelain Fixtures	900	1.1%
Other CDD	17,000	20.0%
<b>Total Construction &amp; Demolition</b>	<b>76,000</b>	<b>89.4%</b>
<b>PROBLEM MATERIALS</b>		
Televisions - CRT	0	<0.1%
Televisions - Non-CRT	0	<0.1%
Other Banned Electronic Equipment	0	<0.1%
Non-Banned Electronic Equipment	0	<0.1%
Small Electrical Appliances	0	<0.1%
White Goods - Refridgerated	0	<0.1%
White Goods - Non-Refridgerated	0	<0.1%
Lead Acid Batteries	0	<0.1%
Other Batteries	0	<0.1%
Fluorescent Light Tubes	0	<0.1%
Compact Fluorescent Light Bulbs	0	<0.1%
Tires	0	<0.1%
Paint	0	<0.1%
Automotive Used Oil/Filters	0	<0.1%
Household Hazardous Waste	0	<0.1%
Sharps, Needles, Lancets	0	<0.1%
Other Problem Materials	0	<0.1%
<b>Total Problem Materials</b>	<b>0</b>	<b>&lt;0.1%</b>

Table 22. Northeast Region CDD Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>OTHER WASTE</b>		
Textiles	100	<0.1%
Carpet	600	0.7%
Carpet Padding	0	<0.1%
Wood Pallets	800	0.9%
Bulky Items	0	<0.1%
Mattresses and Box Springs	0	<0.1%
Wood Furniture	0	<0.1%
Aerosol Cans	0	<0.1%
Compressed Gas Containers	0	<0.1%
	0	
<b>Total Other Waste</b>	<b>1,500</b>	<b>1.7%</b>
<b>TOTALS</b>		
	<b>85,000</b>	<b>100.0%</b>

Note: Composition based on 112 samples

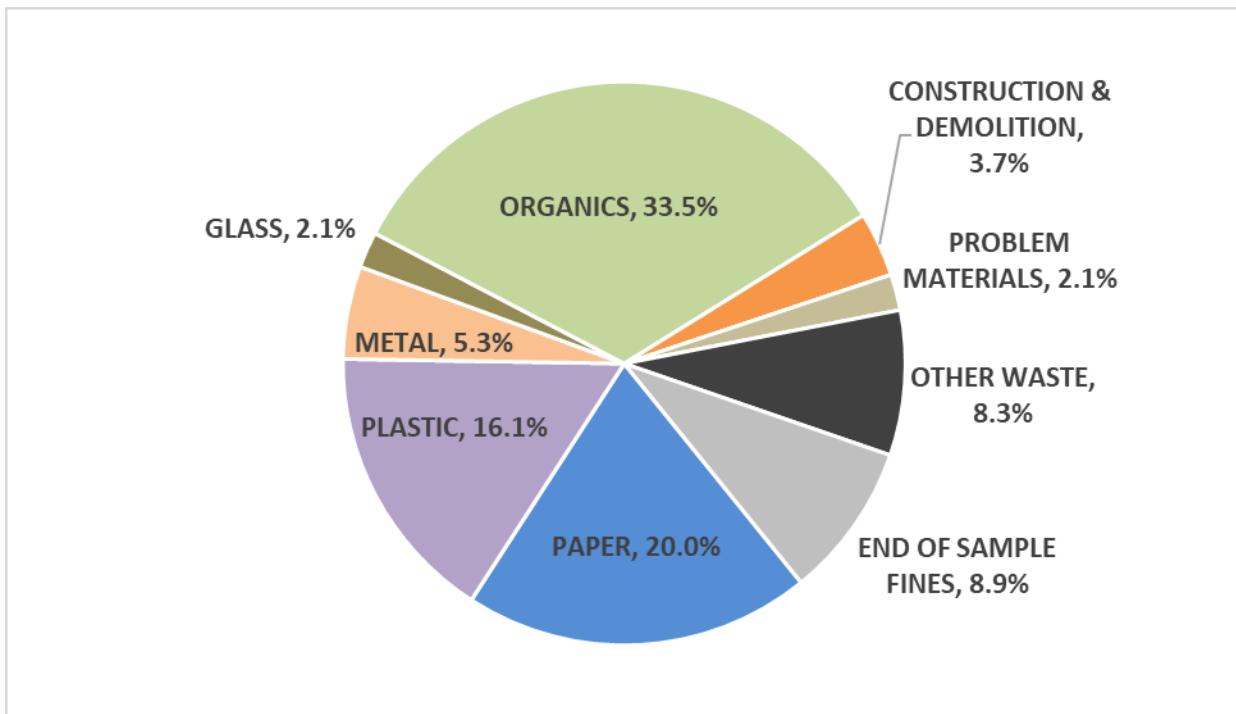
## NORTHERN REGION WASTE COMPOSITION

### Category 1 MSW

#### Overall

**Exhibit 15** provides a summary of the nine material categories that compose the overall Category 1 MSW disposed in the Northern region. Data is provided for each category as a percentage of the total weight. Note that the overall waste composition includes waste from the Single family residential, multi-family, and ICI waste generating sectors only. CDD composition is presented separately. As indicated, organic waste composes the largest portion of the waste stream at 33.5 percent, followed by paper at 20.0 percent, and plastic at 16.1 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 15. Overall Northern Region Waste Composition



**Table 23** provides the detailed breakdown of the Northern region composition by weight for all material components measured as part of this Study. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 23. Overall Northern Region Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>					
1 Newsprint (ONP)	3,900	0.9%	1.2%	0.6%	1.2%
2 High Grade Office Paper	4,500	1.0%	1.2%	0.7%	1.3%
3 Magazines/Catalogs	2,700	0.6%	0.9%	0.4%	0.8%
4 Uncoated OCC - Recyclable	14,300	3.3%	3.2%	2.5%	4.0%
5 Coated OCC	200	<0.1%	0.2%	<0.1%	<0.1%
6 Boxboard	6,400	1.5%	1.6%	1.1%	1.8%
7 Cartons - Aseptic/Gable Top Containers	800	0.2%	0.2%	0.1%	0.2%
8 Mixed Paper - Recyclable	20,900	4.8%	2.5%	4.2%	5.4%
9 Compostable Paper	20,600	4.7%	2.1%	4.2%	5.2%
10 Other Paper	13,400	3.1%	2.5%	2.5%	3.6%
<b>Total Paper</b>	<b>87,600</b>	<b>20.0%</b>			
<b>PLASTIC</b>					
11 PET (#1) Bottles	8,400	1.9%	1.0%	1.7%	2.2%
12 Natural HDPE (#2) Bottles	1,300	0.3%	0.2%	0.3%	0.4%
13 Colored HDPE (#2) Bottles	2,300	0.5%	0.5%	0.4%	0.7%
14 PP (#5) Bottles	200	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	100	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	2,200	0.5%	0.6%	0.4%	0.7%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	1,600	0.4%	1.3%	<0.1%	0.7%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	4,900	1.1%	0.8%	0.9%	1.3%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	800	0.2%	0.2%	0.1%	0.2%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	2,000	0.5%	0.5%	0.3%	0.6%
21 Rigid Non-Packaging	5,200	1.2%	1.1%	0.9%	1.4%
22 Bulky Rigid Plastics	1,700	0.4%	1.0%	0.1%	0.6%
23 PE Recyclable Film	4,600	1.0%	0.6%	0.9%	1.2%
24 Agricultural Film	1,200	0.3%	0.7%	0.1%	0.5%
25 Pouches	400	<0.1%	0.4%	<0.1%	0.2%
26 Other Flexible Films	28,100	6.4%	3.0%	5.7%	7.1%
27 PS Foam (#6)	3,000	0.7%	0.7%	0.5%	0.9%
28 Compostable Plastics	500	0.1%	0.7%	<0.1%	0.3%
29 Other Plastics	2,000	0.5%	0.8%	0.3%	0.6%
<b>Total Plastic</b>	<b>70,700</b>	<b>16.1%</b>			
<b>METAL</b>					
30 Aluminum Beverage Containers	4,300	1.0%	0.8%	0.8%	1.2%
31 Other Aluminum	1,700	0.4%	0.6%	0.2%	0.5%
32 Ferrous ("Tin") Cans	3,500	0.8%	0.6%	0.7%	0.9%
33 Other Ferrous Scrap	3,300	0.8%	1.4%	0.4%	1.1%
34 Other Non-Ferrous Scrap	500	0.1%	0.4%	<0.1%	0.2%
35 Other Metal	10,100	2.3%	4.2%	1.3%	3.3%
<b>Total Metals</b>	<b>23,300</b>	<b>5.3%</b>			

Table 23. Overall Northern Region Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>					
36 Clear Containers - Beverage	2,900	0.7%	0.8%	0.5%	0.8%
37 Colored Containers - Beverage	2,200	0.5%	0.6%	0.4%	0.6%
38 Glass Food Containers	2,500	0.6%	0.7%	0.4%	0.7%
39 Other Glass	1,500	0.3%	0.4%	0.2%	0.4%
<b>Total Glass</b>	<b>9,100</b>	<b>2.1%</b>			
<b>ORGANICS</b>					
40 Yard Materials - <6"	11,800	2.7%	4.5%	1.6%	3.8%
41 Yard Materials - >6"	0	<0.1%	<0.1%	<0.1%	<0.1%
42 Food Scraps (Not Traditionally Edible)	20,000	4.6%	3.6%	3.7%	5.4%
43 Wasted Food	67,600	15.4%	5.8%	14.0%	16.8%
44 Diapers	17,800	4.1%	3.5%	3.2%	4.9%
45 Animal Waste/Kitty Litter	12,000	2.7%	3.9%	1.8%	3.7%
46 Bottom Fines/Dirt	6,000	1.4%	4.9%	0.2%	2.5%
47 Other Organic Material	11,800	2.7%	4.4%	1.7%	3.7%
<b>Total Organics</b>	<b>147,000</b>	<b>33.5%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>					
48 Treated Wood	1,400	0.3%	0.6%	0.2%	0.5%
49 Untreated Clean Dimensional Lumber	2,700	0.6%	1.9%	0.2%	1.1%
50 Unpainted Engineered Wood	1,200	0.3%	1.2%	<0.1%	0.6%
51 Painted/Stained Wood	1,000	0.2%	0.5%	0.1%	0.3%
52 Other Recyclable Wood	200	<0.1%	0.3%	<0.1%	0.1%
53 Rock, Concrete, Brick	400	<0.1%	0.5%	<0.1%	0.2%
54 Gypsum Wallboard - Demo	2,500	0.6%	2.3%	<0.1%	1.1%
55 Gypsum Wallboard - Clean Scrap	0	<0.1%	<0.1%	<0.1%	<0.1%
56 Roofing Shingles	200	<0.1%	0.2%	<0.1%	<0.1%
57 PVC	300	<0.1%	0.4%	<0.1%	0.2%
58 Ceramics/Porcelain Fixtures	1,000	0.2%	0.9%	<0.1%	0.4%
59 Other CDD	5,400	1.2%	3.8%	0.3%	2.1%
<b>Total Construction &amp; Demolition</b>	<b>16,300</b>	<b>3.7%</b>			

Table 23. Overall Northern Region Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>					
60 Televisions - CRT	0	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	0	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	800	0.2%	0.7%	<0.1%	0.4%
63 Non-Banned Electronic Equipment	1,200	0.3%	0.7%	0.1%	0.5%
64 Small Electrical Appliances	3,000	0.7%	2.6%	<0.1%	1.3%
65 White Goods - Refrigerated	0	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refrigerated	1,700	0.4%	2.7%	<0.1%	1.0%
67 Lead Acid Batteries	0	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	300	<0.1%	0.1%	<0.1%	<0.1%
69 Fluorescent Light Tubes	0	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	200	<0.1%	0.2%	<0.1%	<0.1%
71 Tires	0	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	300	<0.1%	0.2%	<0.1%	0.1%
73 Automotive Used Oil/Filters	800	0.2%	0.6%	<0.1%	0.3%
74 Household Hazardous Waste	0	<0.1%	<0.1%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	200	<0.1%	0.2%	<0.1%	0.1%
76 Other Problem Materials	400	<0.1%	0.4%	<0.1%	0.2%
<b>Total Problem Materials</b>	<b>9,000</b>	<b>2.1%</b>			
<b>OTHER WASTE</b>					
77 Textiles	29,200	6.7%	4.8%	5.5%	7.8%
78 Carpet	2,800	0.6%	1.8%	0.2%	1.1%
79 Carpet Padding	400	<0.1%	0.6%	<0.1%	0.2%
80 Wood Pallets	0	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	0	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	0	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	3,000	0.7%	2.3%	0.1%	1.2%
84 Aerosol Cans	1,000	0.2%	0.2%	0.2%	0.3%
85 Compressed Gas Containers	100	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>36,500</b>	<b>8.3%</b>			
<b>END OF SAMPLE FINES</b>					
Other Paper	3,600	0.8%	1.8%	0.4%	1.3%
Other Plastic	3,800	0.9%	1.5%	0.5%	1.2%
Other Glass	0	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	13,600	3.1%	4.4%	2.1%	4.1%
Food Scraps	5,900	1.3%	1.9%	0.9%	1.8%
Wasted Food	4,000	0.9%	1.5%	0.6%	1.3%
Other Organics	8,100	1.8%	1.9%	1.4%	2.3%
<b>TOTALS</b>	<b>39,000</b>	<b>8.9%</b>			
<b>TOTALS</b>	<b>438,500</b>	<b>100.0%</b>			

Note: Composition based on 48 samples

## Single Family Residential

Exhibit 16 provides a summary of the nine material categories that compose the Category 1 Single family residential MSW disposed in the Northern region. Data is provided for each category as a percentage of the total weight. As indicated, organic waste composes the largest portion of the waste stream at 35.7 percent, followed by paper at 19.6 percent, and plastic at 15.1 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 16. Northern Region Single Family Residential Waste Composition

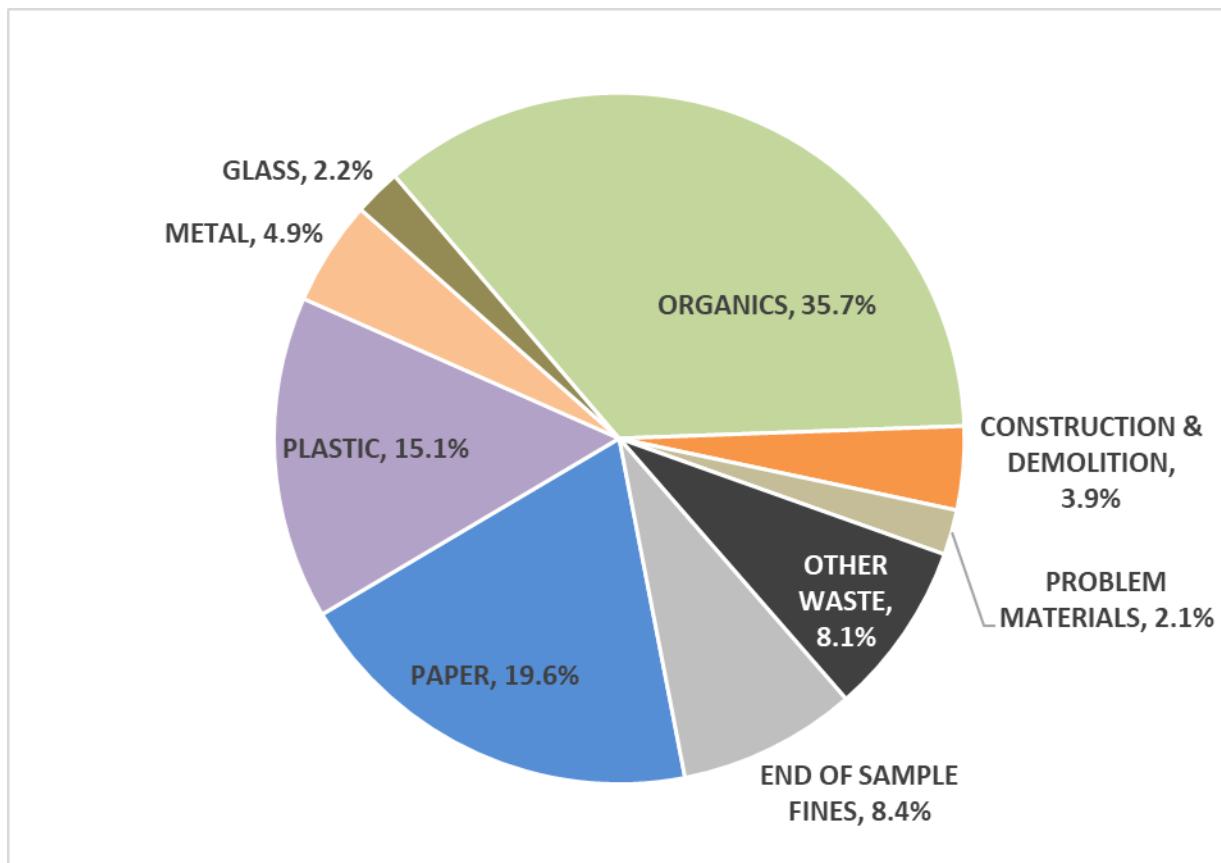


Table 24 provides a detailed profile of the Northern region MSW Single family residential composition by weight that includes the percent contribution of all material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 24. Northern Region Single Family Residential Waste Composition – Detailed  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	0.9%	1.3%	0.5%	1.2%
2 High Grade Office Paper	1.0%	1.2%	0.7%	1.4%
3 Magazines/Catalogs	0.7%	0.9%	0.4%	0.9%
4 Uncoated OCC - Recyclable	2.7%	2.3%	2.0%	3.4%
5 Coated OCC	<0.1%	<0.1%	<0.1%	<0.1%
6 Boxboard	1.4%	1.6%	0.9%	1.8%
7 Cartons - Aseptic/Gable Top Containers	0.2%	0.2%	0.1%	0.3%
8 Mixed Paper - Recyclable	4.9%	2.7%	4.1%	5.7%
9 Compostable Paper	4.7%	1.8%	4.2%	5.3%
10 Other Paper	3.0%	1.6%	2.6%	3.5%
<b>Total Paper</b>	<b>19.6%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	1.8%	0.9%	1.6%	2.1%
12 Natural HDPE (#2) Bottles	0.3%	0.2%	0.3%	0.4%
13 Colored HDPE (#2) Bottles	0.6%	0.6%	0.4%	0.8%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.5%	0.6%	0.3%	0.7%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	0.2%	0.6%	<0.1%	0.4%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	1.2%	0.9%	1.0%	1.5%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.2%	0.1%	0.1%	0.2%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.5%	0.6%	0.3%	0.7%
21 Rigid Non-Packaging	1.2%	1.0%	0.9%	1.5%
22 Bulky Rigid Plastics	0.4%	1.0%	<0.1%	0.7%
23 PE Recyclable Film	1.1%	0.5%	0.9%	1.2%
24 Agricultural Film	0.2%	0.4%	0.1%	0.4%
25 Pouches	0.1%	0.4%	<0.1%	0.2%
26 Other Flexible Films	5.8%	2.3%	5.1%	6.4%
27 PS Foam (#6)	0.5%	0.3%	0.4%	0.6%
28 Compostable Plastics	<0.1%	0.1%	<0.1%	<0.1%
29 Other Plastics	0.4%	0.8%	0.2%	0.7%
<b>Total Plastic</b>	<b>15.1%</b>			

Table 24. Northern Region Single Family Residential Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	0.6%	0.8%	0.4%	0.8%
37 Colored Containers - Beverage	0.6%	0.7%	0.4%	0.8%
38 Glass Food Containers	0.6%	0.7%	0.4%	0.8%
39 Other Glass	0.4%	0.4%	0.3%	0.5%
<b>Total Glass</b>	<b>2.2%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	3.2%	4.8%	1.8%	4.6%
41 Yard Materials - >6"	<0.1%	<0.1%	<0.1%	<0.1%
42 Food Scraps (Not Traditionally Edible)	5.1%	3.9%	4.0%	6.3%
43 Wasted Food	16.7%	4.7%	15.3%	18.1%
44 Diapers	4.2%	3.5%	3.2%	5.2%
45 Animal Waste/Kitty Litter	2.6%	3.9%	1.4%	3.7%
46 Bottom Fines/Dirt	1.6%	5.9%	<0.1%	3.4%
47 Other Organic Material	2.2%	2.6%	1.5%	3.0%
<b>Total Organics</b>	<b>35.7%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.4%	0.6%	0.2%	0.6%
49 Untreated Clean Dimensional Lumber	0.3%	1.1%	<0.1%	0.6%
50 Unpainted Engineered Wood	0.4%	1.4%	<0.1%	0.8%
51 Painted/Stained Wood	0.3%	0.5%	0.1%	0.4%
52 Other Recyclable Wood	<0.1%	0.3%	<0.1%	0.2%
53 Rock, Concrete, Brick	0.1%	0.6%	<0.1%	0.3%
54 Gypsum Wallboard - Demo	0.7%	2.8%	<0.1%	1.5%
55 Gypsum Wallboard - Clean Scrap	<0.1%	<0.1%	<0.1%	<0.1%
56 Roofing Shingles	<0.1%	<0.1%	<0.1%	<0.1%
57 PVC	<0.1%	0.5%	<0.1%	0.3%
58 Ceramics/Porcelain Fixtures	0.3%	1.1%	<0.1%	0.6%
59 Other CDD	1.3%	4.1%	0.1%	2.5%
<b>Total Construction &amp; Demolition</b>	<b>3.9%</b>			

Table 24. Northern Region Single Family Residential Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	0.2%	0.8%	<0.1%	0.4%
63 Non-Banned Electronic Equipment	0.3%	0.6%	<0.1%	0.5%
64 Small Electrical Appliances	0.7%	2.7%	<0.1%	1.5%
65 White Goods - Refrigerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refrigerated	0.6%	3.3%	<0.1%	1.5%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	<0.1%	0.1%	<0.1%	<0.1%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	<0.1%	0.3%	<0.1%	0.2%
73 Automotive Used Oil/Filters	0.2%	0.7%	<0.1%	0.4%
74 Household Hazardous Waste	<0.1%	<0.1%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	<0.1%	<0.1%	<0.1%	<0.1%
76 Other Problem Materials	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Problem Materials</b>	<b>2.1%</b>			
<b>OTHER WASTE</b>				
77 Textiles	6.5%	4.0%	5.3%	7.6%
78 Carpet	0.7%	1.9%	0.2%	1.3%
79 Carpet Padding	0.1%	0.8%	<0.1%	0.4%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	0.6%	2.2%	<0.1%	1.2%
84 Aerosol Cans	0.2%	0.2%	0.2%	0.3%
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>8.1%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	0.7%	1.8%	0.1%	1.2%
Other Plastic	0.8%	1.6%	0.4%	1.3%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	2.6%	2.3%	1.9%	3.3%
Food Scraps	1.5%	1.9%	1.0%	2.1%
Wasted Food	0.9%	1.1%	0.6%	1.2%
Other Organics	1.8%	1.9%	1.2%	2.4%
<b>TOTALS</b>	<b>8.4%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 32 samples

## Multi-Family

Exhibit 17 provides a summary of the nine material categories that comprise the multi-family Category 1 MSW disposed in the Northern region. Data is provided for each category as a percentage of the total weight. As indicated, organic waste composes the largest portion of the waste stream at 28.3 percent, followed by end of sample fines at 22.1 percent, and paper at 20.7 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 17. Northern Region Multi-Family Waste Composition

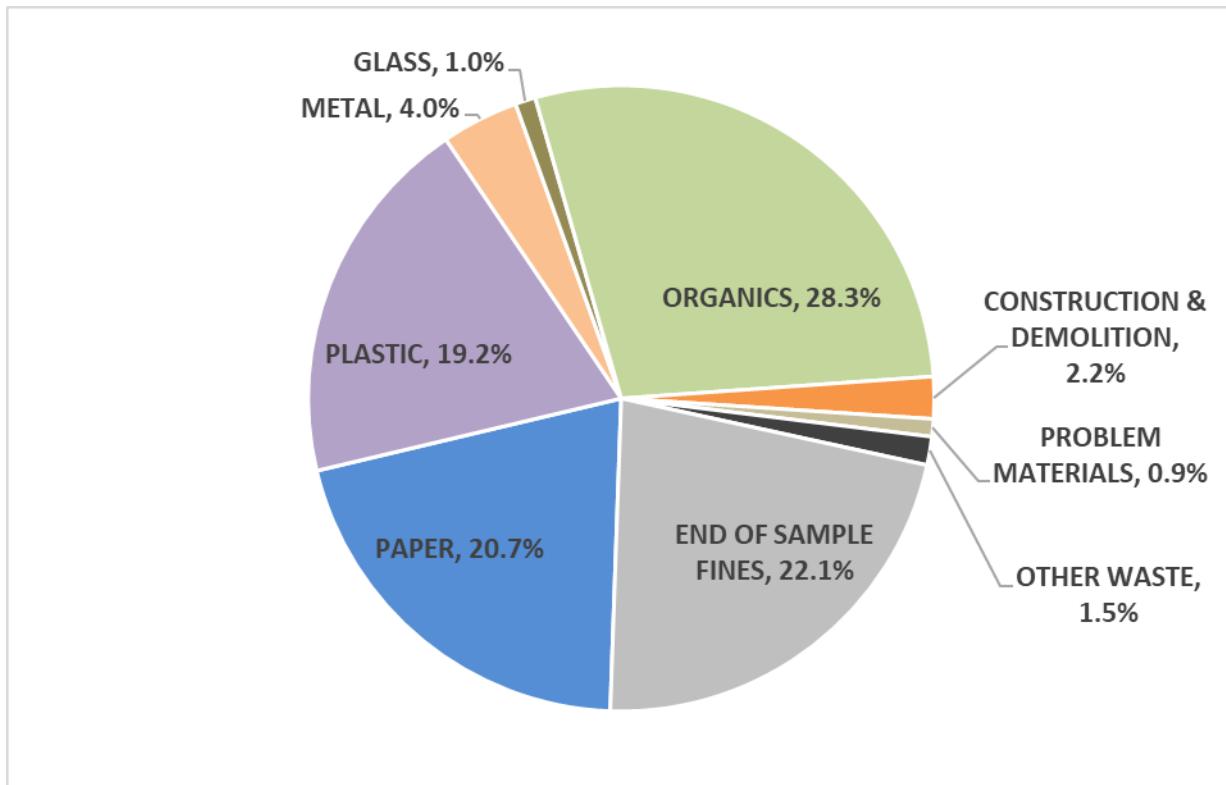


Table 25 provides a detailed profile of the Northern region multi-family MSW composition by weight that includes the percent contribution of all material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 25. Northern Region Multi-Family Waste Composition – Detailed  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	0.5%	<0.1%	0.4%	0.5%
2 High Grade Office Paper	1.5%	1.5%	<0.1%	3.2%
3 Magazines/Catalogs	1.5%	1.7%	<0.1%	3.5%
4 Uncoated OCC - Recyclable	1.9%	1.2%	0.5%	3.3%
5 Coated OCC	<0.1%	<0.1%	<0.1%	<0.1%
6 Boxboard	1.4%	0.7%	0.5%	2.2%
7 Cartons - Aseptic/Gable Top Containers	0.1%	0.2%	<0.1%	0.4%
8 Mixed Paper - Recyclable	4.9%	0.9%	3.8%	6.0%
9 Compostable Paper	5.7%	4.6%	0.4%	11.1%
10 Other Paper	3.2%	0.2%	2.9%	3.5%
<b>Total Paper</b>	<b>20.7%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	3.4%	1.5%	1.7%	5.2%
12 Natural HDPE (#2) Bottles	0.2%	0.3%	<0.1%	0.6%
13 Colored HDPE (#2) Bottles	0.2%	0.2%	<0.1%	0.4%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	0.1%	0.2%	<0.1%	0.4%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.6%	0.6%	<0.1%	1.3%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	0.5%	0.7%	<0.1%	1.3%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	1.9%	1.5%	0.2%	3.6%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.3%	0.3%	<0.1%	0.7%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.6%	0.2%	0.4%	0.8%
21 Rigid Non-Packaging	1.3%	0.4%	0.8%	1.8%
22 Bulky Rigid Plastics	<0.1%	<0.1%	<0.1%	<0.1%
23 PE Recyclable Film	1.0%	0.3%	0.6%	1.4%
24 Agricultural Film	0.1%	0.1%	<0.1%	0.3%
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	8.2%	4.3%	3.1%	13.2%
27 PS Foam (#6)	0.7%	0.2%	0.4%	0.9%
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Plastic</b>	<b>19.2%</b>			

Table 25. Northern Region Multi-Family Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	0.3%	0.5%	<0.1%	0.9%
37 Colored Containers - Beverage	<0.1%	<0.1%	<0.1%	<0.1%
38 Glass Food Containers	0.4%	0.3%	<0.1%	0.7%
39 Other Glass	0.3%	0.3%	<0.1%	0.7%
<b>Total Glass</b>	<b>1.0%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	1.0%	1.3%	<0.1%	2.5%
41 Yard Materials - >6"	<0.1%	<0.1%	<0.1%	<0.1%
42 Food Scraps (Not Traditionally Edible)	1.9%	1.9%	<0.1%	4.1%
43 Wasted Food	12.3%	10.1%	0.6%	24.0%
44 Diapers	3.5%	0.6%	2.8%	4.2%
45 Animal Waste/Kitty Litter	9.2%	6.3%	1.9%	16.6%
46 Bottom Fines/Dirt	<0.1%	<0.1%	<0.1%	<0.1%
47 Other Organic Material	0.4%	0.2%	0.2%	0.7%
<b>Total Organics</b>	<b>28.3%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	<0.1%	<0.1%	<0.1%	<0.1%
49 Untreated Clean Dimensional Lumber	<0.1%	0.1%	<0.1%	0.1%
50 Untreated Clean Engineered Wood	<0.1%	<0.1%	<0.1%	<0.1%
51 Painted/Stained Wood	0.8%	<0.1%	<0.1%	<0.1%
52 Other Recyclable Wood	<0.1%	1.1%	<0.1%	1.3%
53 Rock, Concrete, Brick	0.4%	<0.1%	<0.1%	<0.1%
54 Gypsum Wallboard - Demo	<0.1%	0.6%	<0.1%	0.7%
55 Gypsum Wallboard - Clean Scrap	<0.1%	<0.1%	<0.1%	<0.1%
56 Roofing Shingles	0.7%	<0.1%	<0.1%	<0.1%
57 PVC	<0.1%	1.1%	<0.1%	1.2%
58 Ceramics/Porcelain Fixtures	<0.1%	<0.1%	<0.1%	<0.1%
59 Other C&D	0.2%	<0.1%	<0.1%	<0.1%
<b>Total Construction &amp; Demolition</b>	<b>2.2%</b>			

Table 25. Northern Region Multi-Family Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

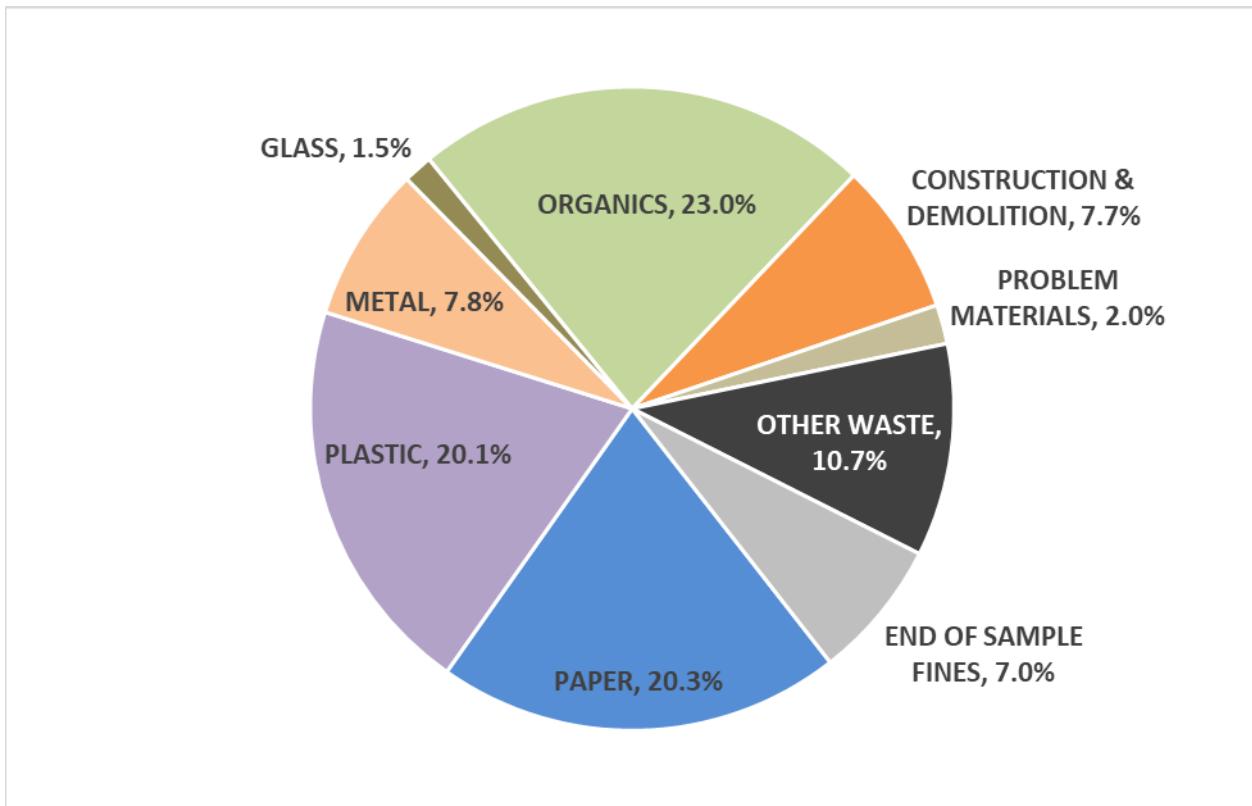
<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	0.4%	0.6%	<0.1%	1.1%
63 Non-Banned Electronic Equipment	<0.1%	<0.1%	<0.1%	<0.1%
64 Small Electrical Appliances	<0.1%	<0.1%	<0.1%	<0.1%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	0.2%	0.3%	<0.1%	0.5%
73 Automotive Used Oil/Filters	<0.1%	<0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	<0.1%	<0.1%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	0.2%	0.2%	<0.1%	0.4%
76 Other Problem Materials	0.1%	0.2%	<0.1%	0.3%
<b>Total Problem Materials</b>	<b>0.9%</b>			
<b>OTHER WASTE</b>				
77 Textiles	1.3%	0.7%	0.4%	2.1%
78 Carpet	<0.1%	<0.1%	<0.1%	<0.1%
79 Carpet Padding	<0.1%	<0.1%	<0.1%	<0.1%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	<0.1%	<0.1%	<0.1%	<0.1%
84 Aerosol Cans	0.2%	0.2%	<0.1%	0.4%
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>1.5%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	<0.1%	<0.1%	<0.1%	<0.1%
Other Plastic	<0.1%	<0.1%	<0.1%	<0.1%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	14.3%	20.2%	<0.1%	37.8%
Food Scraps	2.1%	2.9%	<0.1%	5.5%
Wasted Food	4.2%	5.9%	<0.1%	11.0%
Other Organics	1.6%	2.2%	<0.1%	4.2%
<b>TOTALS</b>	<b>22.1%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 2 samples

## ICI

**Exhibit 18** provides a summary of the nine material categories that comprise the Category 1 MSW disposed by the ICI generating sector in the Northern region. Data is provided for each category as a percentage of the total weight. As indicated, organic waste composes the largest portion of the waste stream at 23.0 percent, followed by paper at 20.3 percent, and plastic at 20.1 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 18. Northern Region ICI Waste Composition



**Table 26** provides a detailed profile of the Northern region ICI MSW composition by weight that includes the percent contribution of all material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 26. Northern Region ICI Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	0.2%	0.2%	<0.1%	0.4%
2 High Grade Office Paper	0.6%	0.2%	0.4%	0.7%
3 Magazines/Catalogs	<0.1%	0.2%	<0.1%	0.3%
4 Uncoated OCC - Recyclable	6.5%	6.3%	1.9%	11.1%
5 Coated OCC	0.2%	0.5%	<0.1%	0.6%
6 Boxboard	0.4%	0.5%	<0.1%	0.7%
7 Cartons - Aseptic/Gable Top Containers	0.1%	0.1%	<0.1%	0.2%
8 Mixed Paper - Recyclable	5.7%	2.8%	3.6%	7.7%
9 Compostable Paper	4.5%	2.1%	2.9%	6.0%
10 Other Paper	2.1%	1.7%	0.9%	3.4%
<b>Total Paper</b>	<b>20.3%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	1.6%	0.9%	0.9%	2.2%
12 Natural HDPE (#2) Bottles	0.3%	0.3%	<0.1%	0.4%
13 Colored HDPE (#2) Bottles	0.3%	0.2%	0.2%	0.5%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.8%	1.2%	<0.1%	1.6%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	2.0%	3.6%	<0.1%	4.7%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	1.1%	0.4%	0.8%	1.4%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	<0.1%	0.1%	<0.1%	0.2%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.2%	0.2%	<0.1%	0.3%
21 Rigid Non-Packaging	2.3%	1.8%	0.9%	3.6%
22 Bulky Rigid Plastics	0.8%	1.7%	<0.1%	2.0%
23 PE Recyclable Film	0.5%	0.5%	<0.1%	0.9%
24 Agricultural Film	<0.1%	0.2%	<0.1%	0.2%
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	8.2%	6.1%	3.7%	12.7%
27 PS Foam (#6)	1.6%	1.4%	0.5%	2.6%
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	0.4%	0.7%	<0.1%	0.9%
<b>Total Plastic</b>	<b>20.1%</b>			

Table 26. Northern Region ICI Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	0.7%	0.5%	0.4%	1.1%
37 Colored Containers - Beverage	0.5%	0.4%	0.2%	0.7%
38 Glass Food Containers	<0.1%	0.1%	<0.1%	0.1%
39 Other Glass	0.2%	0.3%	<0.1%	0.4%
<b>Total Glass</b>	<b>1.5%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	2.5%	5.7%	<0.1%	6.7%
41 Yard Materials - >6"	<0.1%	<0.1%	<0.1%	<0.1%
42 Food Scraps (Not Traditionally Edible)	3.5%	2.8%	1.4%	5.5%
43 Wasted Food	7.8%	5.7%	3.5%	12.0%
44 Diapers	2.1%	2.8%	<0.1%	4.1%
45 Animal Waste/Kitty Litter	3.4%	4.2%	0.3%	6.5%
46 Bottom Fines/Dirt	1.5%	2.6%	<0.1%	3.4%
47 Other Organic Material	2.3%	2.1%	0.7%	3.9%
<b>Total Organics</b>	<b>23.0%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.1%	0.3%	<0.1%	0.3%
49 Untreated Clean Dimensional Lumber	3.0%	4.5%	<0.1%	6.4%
50 Unpainted Engineered Wood	0.3%	0.8%	<0.1%	0.9%
51 Painted/Stained Wood	<0.1%	0.2%	<0.1%	0.2%
52 Other Recyclable Wood	<0.1%	<0.1%	<0.1%	<0.1%
53 Rock, Concrete, Brick	<0.1%	<0.1%	<0.1%	<0.1%
54 Gypsum Wallboard - Demo	0.9%	1.6%	<0.1%	2.1%
55 Gypsum Wallboard - Clean Scrap	<0.1%	<0.1%	<0.1%	<0.1%
56 Roofing Shingles	<0.1%	<0.1%	<0.1%	<0.1%
57 PVC	<0.1%	<0.1%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	0.1%	0.3%	<0.1%	0.3%
59 Other CDD	3.1%	5.5%	<0.1%	7.2%
<b>Total Construction &amp; Demolition</b>	<b>7.7%</b>			

Table 26. Northern Region ICI Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	<0.1%	0.2%	<0.1%	0.2%
63 Non-Banned Electronic Equipment	1.0%	1.6%	<0.1%	2.2%
64 Small Electrical Appliances	<0.1%	<0.1%	<0.1%	<0.1%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	<0.1%	0.1%	<0.1%	0.2%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	<0.1%	<0.1%	<0.1%	<0.1%
73 Automotive Used Oil/Filters	0.4%	1.0%	<0.1%	1.2%
74 Household Hazardous Waste	<0.1%	<0.1%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	0.3%	0.7%	<0.1%	0.9%
76 Other Problem Materials	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Problem Materials</b>	<b>2.0%</b>			
<b>OTHER WASTE</b>				
77 Textiles	7.6%	3.8%	4.9%	10.4%
78 Carpet	<0.1%	<0.1%	<0.1%	<0.1%
79 Carpet Padding	<0.1%	<0.1%	<0.1%	<0.1%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	2.8%	3.9%	<0.1%	5.7%
84 Aerosol Cans	0.1%	<0.1%	<0.1%	0.2%
85 Compressed Gas Containers	0.1%	0.2%	<0.1%	0.3%
<b>Total Other Waste</b>	<b>10.7%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	<0.1%	<0.1%	<0.1%	<0.1%
Other Plastic	<0.1%	<0.1%	<0.1%	<0.1%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	2.5%	3.0%	0.3%	4.7%
Food Scraps	2.4%	2.9%	0.2%	4.6%
Wasted Food	1.2%	1.4%	0.2%	2.3%
Other Organics	0.9%	1.2%	<0.1%	1.8%
<b>TOTALS</b>	<b>7.0%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 5 samples

## Category 25 Construction and Demolition Debris (CDD)

No CDD samples could be identified and visually characterized in the Northern region. The two landfills where sampling and sorting took place receive little quantities of source separated CDD materials. During sampling and sorting at the Moccasin Mike Landfill, which received just over 4,000 tons of CDD materials in 2018, landfill staff indicated that April is too early in the season for CDD materials to be disposed at the landfill as building and construction projects have typically not commenced yet.

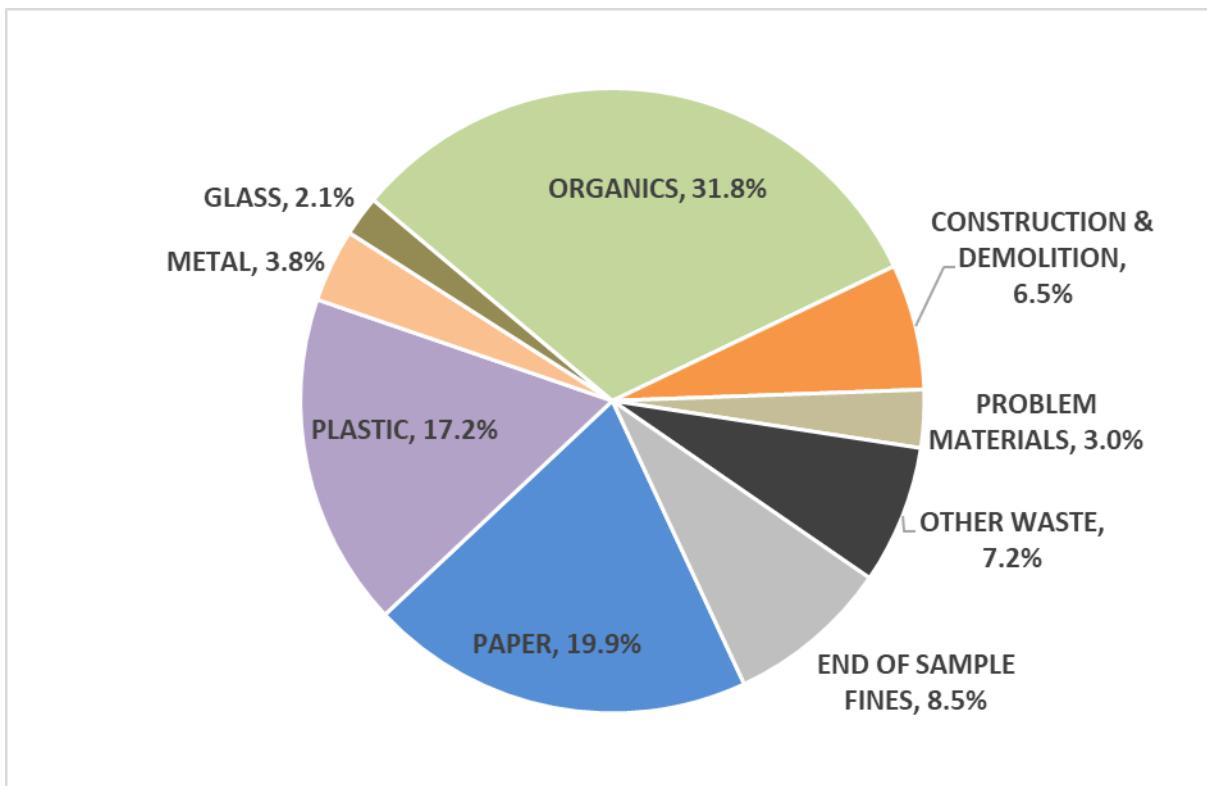
## SOUTH CENTRAL REGION WASTE COMPOSITION

### Category 1 MSW

#### Overall

**Exhibit 19** provides a summary of the nine material categories that compose the overall Category 1 MSW disposed in the South Central region. Data is provided for each category as a percentage of the total weight. Note that the overall waste composition includes waste from the Single family residential, multi-family, and ICI waste generating sectors only. CDD composition is presented separately. As indicated, organic waste composes the largest portion of the waste stream at 31.8 percent, followed by paper at 19.9 percent, and plastic at 17.2 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 19. Overall South Central Waste Composition



**Table 27** provides the detailed breakdown of the composition by weight for all material components measured as part of this Study in the South Central region. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 27. Overall South Central Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

Material Components	2020 Tons	Mean Composition	Standard Deviation	90% Confidence Limits	
				Lower	Upper
<b>PAPER</b>					
1 Newsprint (ONP)	8,300	0.9%	1.4%	0.7%	1.2%
2 High Grade Office Paper	7,000	0.8%	1.1%	0.6%	1.0%
3 Magazines/Catalogs	5,300	0.6%	0.8%	0.5%	0.7%
4 Uncoated OCC - Recyclable	18,700	2.1%	2.8%	1.6%	2.6%
5 Coated OCC	1,400	0.2%	0.8%	<0.1%	0.3%
6 Boxboard	7,200	0.8%	0.6%	0.7%	0.9%
7 Cartons - Aseptic/Gable Top Containers	5,400	0.6%	2.2%	0.2%	1.0%
8 Mixed Paper - Recyclable	35,000	3.9%	3.9%	3.2%	4.6%
9 Compostable Paper	59,300	6.7%	3.6%	6.0%	7.3%
10 Other Paper	29,900	3.4%	4.6%	2.6%	4.2%
<b>Total Paper</b>	<b>177,600</b>	<b>19.9%</b>			
<b>PLASTIC</b>	0				
11 PET (#1) Bottles	9,700	1.1%	0.8%	1.0%	1.2%
12 Natural HDPE (#2) Bottles	2,900	0.3%	0.7%	0.2%	0.5%
13 Colored HDPE (#2) Bottles	3,000	0.3%	0.5%	0.2%	0.4%
14 PP (#5) Bottles	100	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	100	<0.1%	<0.1%	<0.1%	<0.1%
PET(#1) Non-Bottle Rigid Containers & Packaging	2,800	0.3%	0.4%	0.2%	0.4%
16 HDPE (#2) Non-Bottle Rigid Containers & Packaging	1,000	0.1%	0.2%	<0.1%	0.1%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	8,400	0.9%	0.6%	0.8%	1.1%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	1,700	0.2%	0.3%	0.1%	0.2%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	7,500	0.8%	0.9%	0.7%	1.0%
21 Rigid Non-Packaging	12,100	1.4%	1.5%	1.1%	1.6%
22 Bulky Rigid Plastics	9,200	1.0%	2.4%	0.6%	1.4%
23 PE Recyclable Film	10,600	1.2%	1.4%	1.0%	1.4%
24 Agricultural Film	2,300	0.3%	0.5%	0.2%	0.3%
25 Pouches	1,100	0.1%	0.6%	<0.1%	0.2%
26 Other Flexible Films	64,000	7.2%	4.1%	6.5%	7.9%
27 PS Foam (#6)	7,700	0.9%	0.8%	0.7%	1.0%
28 Compostable Plastics	300	<0.1%	0.3%	<0.1%	<0.1%
29 Other Plastics	9,000	1.0%	1.4%	0.8%	1.3%
<b>Total Plastic</b>	<b>153,600</b>	<b>17.2%</b>			
<b>METAL</b>	0				
30 Aluminum Beverage Containers	5,800	0.6%	0.6%	0.5%	0.8%
31 Other Aluminum	4,000	0.5%	0.5%	0.4%	0.5%
32 Ferrous ("Tin") Cans	3,900	0.4%	0.5%	0.4%	0.5%
33 Other Ferrous Scrap	13,000	1.5%	2.6%	1.0%	1.9%
34 Other Non-Ferrous Scrap	1,100	0.1%	0.6%	<0.1%	0.2%
35 Other Metal	5,900	0.7%	1.2%	0.4%	0.9%
<b>Total Metals</b>	<b>33,700</b>	<b>3.8%</b>			
<b>GLASS</b>	0				
36 Clear Containers - Beverage	7,300	0.8%	2.9%	0.3%	1.3%
37 Colored Containers - Beverage	4,000	0.4%	0.8%	0.3%	0.6%
38 Glass Food Containers	2,700	0.3%	0.5%	0.2%	0.4%
39 Other Glass	4,600	0.5%	0.7%	0.4%	0.6%
<b>Total Glass</b>	<b>18,500</b>	<b>2.1%</b>			

Table 27. Overall South Central Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>	0				
36 Clear Containers - Beverage	7,300	0.8%	2.9%	0.3%	1.3%
37 Colored Containers - Beverage	4,000	0.4%	0.8%	0.3%	0.6%
38 Glass Food Containers	2,700	0.3%	0.5%	0.2%	0.4%
39 Other Glass	4,600	0.5%	0.7%	0.4%	0.6%
<b>Total Glass</b>	<b>18,500</b>	<b>2.1%</b>			
<b>ORGANICS</b>	0				
40 Yard Materials - <6"	23,700	2.7%	5.8%	1.6%	3.7%
41 Yard Materials - >6"	700	<0.1%	0.5%	<0.1%	0.2%
42 Food Scraps (Not Traditionally Edible)	56,700	6.4%	5.9%	5.3%	7.4%
43 Wasted Food	119,600	13.4%	11.6%	11.4%	15.5%
44 Diapers	37,400	4.2%	3.6%	3.6%	4.8%
45 Animal Waste/Kitty Litter	21,500	2.4%	3.8%	1.8%	3.1%
46 Bottom Fines/Dirt	6,200	0.7%	2.8%	0.2%	1.2%
47 Other Organic Material	17,300	1.9%	3.3%	1.4%	2.5%
<b>Total Organics</b>	<b>283,100</b>	<b>31.8%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>	0				
48 Treated Wood	1,900	0.2%	1.3%	<0.1%	0.4%
49 Untreated Clean Dimensional Lumber	15,000	1.7%	7.2%	0.4%	2.9%
50 Unpainted Engineered Wood	12,100	1.4%	2.6%	0.9%	1.8%
51 Painted/Stained Wood	6,000	0.7%	1.5%	0.4%	0.9%
52 Other Recyclable Wood	2,700	0.3%	1.1%	0.1%	0.5%
53 Rock, Concrete, Brick	3,300	0.4%	1.1%	0.2%	0.6%
54 Gypsum Wallboard - Demo	3,500	0.4%	2.5%	<0.1%	0.8%
55 Gypsum Wallboard - Clean Scrap	0	<0.1%	<0.1%	<0.1%	<0.1%
56 Roofing Shingles	700	<0.1%	0.5%	<0.1%	0.2%
57 PVC	400	<0.1%	0.2%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	1,000	0.1%	0.5%	<0.1%	0.2%
59 Other CDD	11,400	1.3%	3.4%	0.7%	1.9%
<b>Total Construction &amp; Demolition</b>	<b>58,000</b>	<b>6.5%</b>			

Table 27. Overall South Central Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>	0				
60 Televisions - CRT	2,300	0.3%	2.4%	<0.1%	0.7%
61 Televisions - Non-CRT	400	<0.1%	0.4%	<0.1%	0.1%
62 Other Banned Electronic Equipment	2,900	0.3%	1.4%	<0.1%	0.6%
63 Non-Banned Electronic Equipment	2,900	0.3%	0.9%	0.2%	0.5%
64 Small Electrical Appliances	5,000	0.6%	1.6%	0.3%	0.8%
65 White Goods - Refrigerated	1,900	0.2%	1.4%	<0.1%	0.5%
66 White Goods - Non-Refrigerated	0	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	0	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	1,500	0.2%	0.4%	0.1%	0.2%
69 Fluorescent Light Tubes	0	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	0	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	100	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	1,600	0.2%	1.4%	<0.1%	0.4%
73 Automotive Used Oil/Filters	100	<0.1%	<0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	200	<0.1%	0.2%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	900	<0.1%	0.5%	<0.1%	0.2%
76 Other Problem Materials	6,900	0.8%	2.7%	0.3%	1.3%
<b>Total Problem Materials</b>	<b>26,600</b>	<b>3.0%</b>			
<b>OTHER WASTE</b>	0				
77 Textiles	43,000	4.8%	6.6%	3.7%	6.0%
78 Carpet	10,900	1.2%	4.6%	0.4%	2.0%
79 Carpet Padding	700	<0.1%	0.5%	<0.1%	0.2%
80 Wood Pallets	1,700	0.2%	1.8%	<0.1%	0.5%
81 Bulky Items	1,700	0.2%	1.7%	<0.1%	0.5%
82 Mattresses and Box Springs	0	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	3,500	0.4%	2.2%	<0.1%	0.8%
84 Aerosol Cans	1,900	0.2%	0.2%	0.2%	0.3%
85 Compressed Gas Containers	400	<0.1%	0.4%	<0.1%	0.1%
<b>Total Other Waste</b>	<b>63,800</b>	<b>7.2%</b>			
<b>END OF SAMPLE FINES</b>	0				
Other Paper	5,100	0.6%	0.8%	0.4%	0.7%
Other Plastic	4,100	0.5%	0.9%	0.3%	0.6%
Other Glass	1,000	0.1%	1.0%	<0.1%	0.3%
Bottom Fines/Dirt	39,900	4.5%	4.7%	3.7%	5.3%
Food Scraps	0	<0.1%	<0.1%	<0.1%	<0.1%
Wasted Food	0	<0.1%	<0.1%	<0.1%	<0.1%
Other Organics	25,300	2.8%	3.5%	2.2%	3.4%
<b>TOTALS</b>	<b>75,300</b>	<b>8.5%</b>			
<b>TOTALS</b>	<b>890,200</b>	<b>100.0%</b>			

Note: Composition based on 89 samples

## Single Family Residential

Exhibit 20 provides a summary of the nine material categories that compose the Category 1 Single family residential MSW disposed in the South Central region. Data is provided for each category as a percentage of the total weight. As indicated, organic waste composes the largest portion of the waste stream at 33.6 percent, followed by paper at 19.8 percent, and plastic at 16.2 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 20. South Central Single family residential Waste Composition

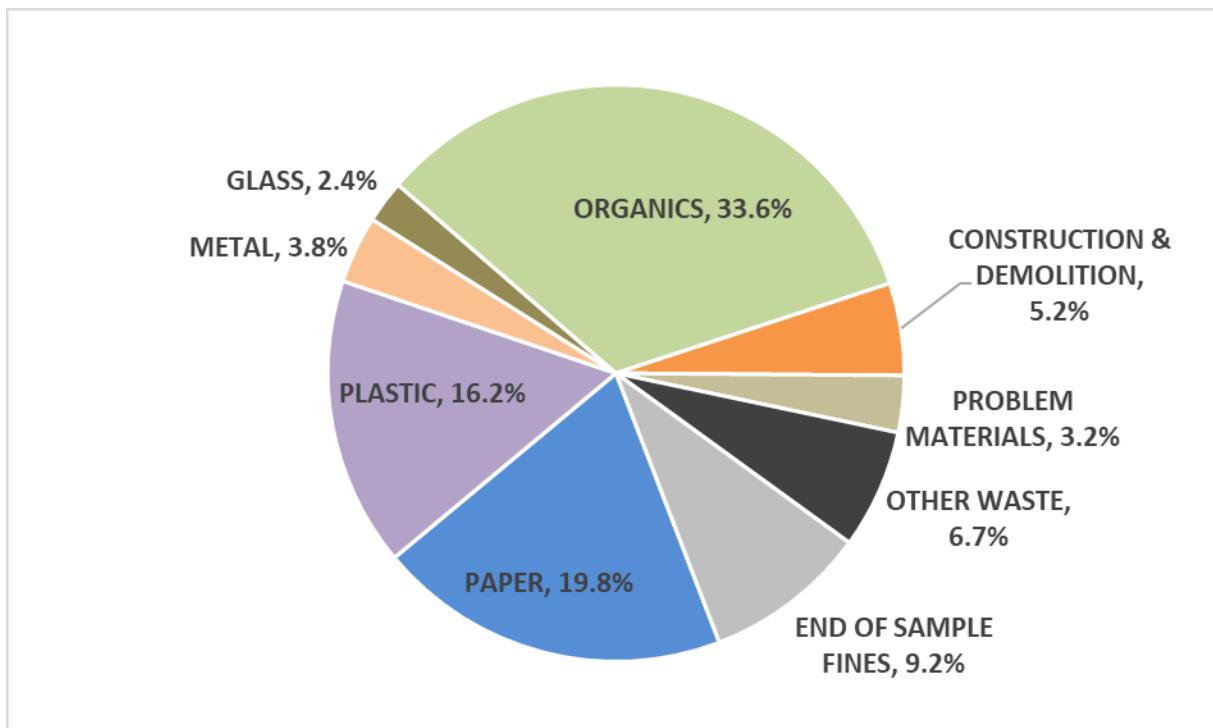


Table 28 provides a detailed profile of the overall MSW Single family residential composition by weight that includes the percent contribution of all material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 28. South Central Single Family Residential Waste Composition – Detailed  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	1.0%	1.2%	0.8%	1.3%
2 High Grade Office Paper	0.9%	1.3%	0.6%	1.1%
3 Magazines/Catalogs	0.6%	0.8%	0.5%	0.8%
4 Uncoated OCC - Recyclable	1.3%	1.1%	1.1%	1.6%
5 Coated OCC	<0.1%	0.3%	<0.1%	0.1%
6 Boxboard	0.9%	0.6%	0.8%	1.1%
7 Cartons - Aseptic/Gable Top Containers	0.4%	1.6%	<0.1%	0.8%
8 Mixed Paper - Recyclable	3.8%	1.8%	3.4%	4.2%
9 Compostable Paper	8.0%	2.8%	7.3%	8.6%
10 Other Paper	2.7%	1.9%	2.3%	3.2%
<b>Total Paper</b>	<b>19.8%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	1.0%	0.6%	0.9%	1.1%
12 Natural HDPE (#2) Bottles	0.2%	0.2%	0.1%	0.2%
13 Colored HDPE (#2) Bottles	0.3%	0.4%	0.2%	0.4%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.3%	0.3%	0.2%	0.4%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	0.1%	0.2%	<0.1%	0.2%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	1.1%	0.5%	1.0%	1.2%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.2%	0.3%	0.1%	0.3%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.9%	0.6%	0.7%	1.0%
21 Rigid Non-Packaging	1.2%	1.0%	1.0%	1.5%
22 Bulky Rigid Plastics	0.7%	1.6%	0.3%	1.0%
23 PE Recyclable Film	1.1%	0.8%	1.0%	1.3%
24 Agricultural Film	0.4%	0.6%	0.2%	0.5%
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	6.5%	2.1%	6.0%	7.0%
27 PS Foam (#6)	1.0%	0.5%	0.9%	1.1%
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	1.2%	1.6%	0.8%	1.5%
<b>Total Plastic</b>	<b>16.2%</b>			
<b>METAL</b>				
30 Aluminum Beverage Containers	0.6%	0.4%	0.5%	0.7%
31 Other Aluminum	0.6%	0.5%	0.5%	0.7%
32 Ferrous ("Tin") Cans	0.5%	0.4%	0.4%	0.5%
33 Other Ferrous Scrap	1.4%	2.0%	0.9%	1.9%
34 Other Non-Ferrous Scrap	0.2%	0.8%	<0.1%	0.3%
35 Other Metal	0.6%	1.0%	0.4%	0.8%
<b>Total Metals</b>	<b>3.8%</b>			

Table 28. South Central Single Family Residential Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	0.9%	3.8%	<0.1%	1.8%
37 Colored Containers - Beverage	0.5%	0.9%	0.3%	0.7%
38 Glass Food Containers	0.4%	0.5%	0.3%	0.5%
39 Other Glass	0.6%	0.7%	0.4%	0.8%
<b>Total Glass</b>	<b>2.4%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	4.2%	7.1%	2.6%	5.9%
41 Yard Materials - >6"	0.1%	0.7%	<0.1%	0.3%
42 Food Scraps (Not Traditionally Edible)	7.6%	4.9%	6.5%	8.7%
43 Wasted Food	11.4%	5.3%	10.2%	12.6%
44 Diapers	4.7%	3.5%	3.9%	5.5%
45 Animal Waste/Kitty Litter	3.3%	3.9%	2.4%	4.2%
46 Bottom Fines/Dirt	0.7%	3.1%	<0.1%	1.4%
47 Other Organic Material	1.5%	1.7%	1.1%	1.9%
<b>Total Organics</b>	<b>33.6%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.3%	1.6%	<0.1%	0.7%
49 Untreated Clean Dimensional Lumber	0.7%	1.9%	0.2%	1.1%
50 Unpainted Engineered Wood	1.1%	2.2%	0.6%	1.6%
51 Painted/Stained Wood	0.5%	1.3%	0.2%	0.8%
52 Other Recyclable Wood	0.5%	1.4%	0.2%	0.8%
53 Rock, Concrete, Brick	0.4%	1.0%	0.1%	0.6%
54 Gypsum Wallboard - Demo	0.1%	0.6%	<0.1%	0.3%
55 Gypsum Wallboard - Clean Scrap	<0.1%	<0.1%	<0.1%	<0.1%
56 Roofing Shingles	<0.1%	0.1%	<0.1%	<0.1%
57 PVC	<0.1%	0.2%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	0.1%	0.4%	<0.1%	0.2%
59 Other CDD	1.4%	3.7%	0.5%	2.2%
<b>Total Construction &amp; Demolition</b>	<b>5.2%</b>			

Table 28. South Central Single Family Residential Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	0.4%	3.2%	<0.1%	1.2%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	0.3%	1.5%	<0.1%	0.6%
63 Non-Banned Electronic Equipment	0.5%	1.2%	0.2%	0.8%
64 Small Electrical Appliances	0.5%	1.4%	0.2%	0.9%
65 White Goods - Refridgerated	0.2%	1.3%	<0.1%	0.5%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	0.2%	0.5%	0.1%	0.3%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	<0.1%	0.2%	<0.1%	0.1%
73 Automotive Used Oil/Filters	<0.1%	<0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	<0.1%	0.2%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	<0.1%	0.3%	<0.1%	0.1%
76 Other Problem Materials	0.8%	3.0%	0.1%	1.5%
<b>Total Problem Materials</b>	<b>3.2%</b>			
<b>OTHER WASTE</b>				
77 Textiles	5.3%	3.7%	4.4%	6.1%
78 Carpet	0.8%	2.2%	0.3%	1.3%
79 Carpet Padding	<0.1%	0.6%	<0.1%	0.2%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	0.1%	0.6%	<0.1%	0.3%
84 Aerosol Cans	0.2%	0.3%	0.2%	0.3%
85 Compressed Gas Containers	<0.1%	0.5%	<0.1%	0.2%
<b>Total Other Waste</b>	<b>6.7%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	0.5%	0.7%	0.3%	0.7%
Other Plastic	0.5%	0.8%	0.3%	0.7%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	4.8%	4.2%	3.9%	5.8%
Food Scraps	<0.1%	<0.1%	<0.1%	<0.1%
Wasted Food	<0.1%	<0.1%	<0.1%	<0.1%
Other Organics	3.3%	3.9%	2.4%	4.2%
<b>TOTALS</b>	<b>9.2%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 51 samples

## Multi-Family

Exhibit 21 provides a summary of the nine material categories that comprise the Category 1 MSW disposed by the multi-family generating sector in the South Central region. Data is provided for each category as a percentage of the total weight. As indicated, organic waste composes the largest portion of the waste stream at 38.0 percent, followed by paper at 20.2 percent, and plastic at 13.4 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 21. South Central Multi-Family Waste Composition

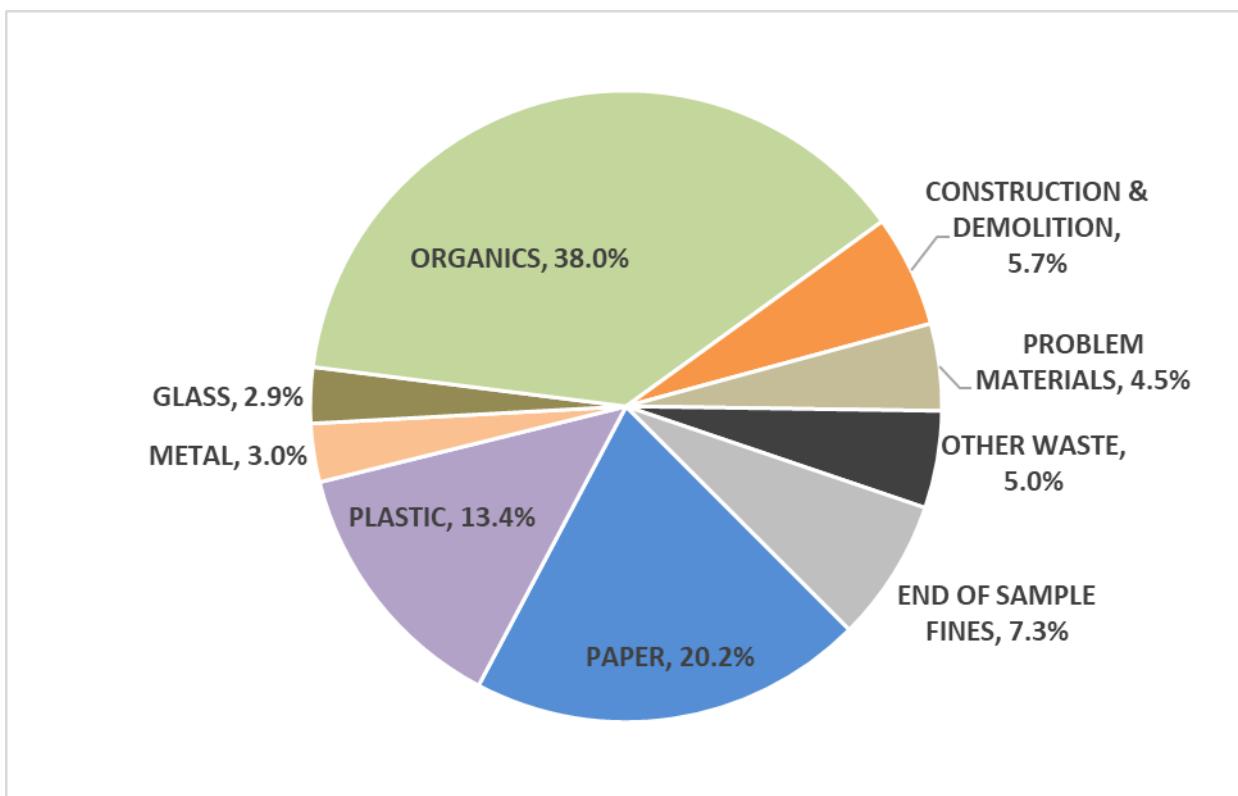


Table 29 provides a detailed profile of the South Central region multi-family MSW composition by weight that includes the percent contribution of all material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 29. South Central Multi-Family Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	0.9%	1.5%	<0.1%	2.3%
2 High Grade Office Paper	1.6%	1.4%	0.3%	2.9%
3 Magazines/Catalogs	0.9%	0.4%	0.4%	1.3%
4 Uncoated OCC - Recyclable	2.8%	1.2%	1.7%	4.0%
5 Coated OCC	<0.1%	<0.1%	<0.1%	<0.1%
6 Boxboard	1.2%	0.4%	0.8%	1.6%
7 Cartons - Aseptic/Gable Top Containers	1.2%	1.4%	<0.1%	2.6%
8 Mixed Paper - Recyclable	5.4%	0.5%	4.9%	5.8%
9 Compostable Paper	4.6%	2.7%	2.1%	7.1%
10 Other Paper	1.7%	1.4%	0.4%	3.0%
<b>Total Paper</b>	<b>20.2%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	1.9%	0.9%	1.1%	2.8%
12 Natural HDPE (#2) Bottles	0.8%	0.7%	0.2%	1.5%
13 Colored HDPE (#2) Bottles	0.7%	0.5%	0.2%	1.1%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.2%	0.2%	<0.1%	0.3%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	<0.1%	<0.1%	<0.1%	<0.1%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	0.8%	0.9%	<0.1%	1.7%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.2%	<0.1%	<0.1%	0.3%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.6%	<0.1%	0.6%	0.6%
21 Rigid Non-Packaging	1.8%	0.9%	0.9%	2.7%
22 Bulky Rigid Plastics	<0.1%	<0.1%	<0.1%	<0.1%
23 PE Recyclable Film	2.5%	2.3%	0.3%	4.7%
24 Agricultural Film	<0.1%	<0.1%	<0.1%	<0.1%
25 Pouches	<0.1%	<0.1%	<0.1%	0.2%
26 Other Flexible Films	3.1%	2.7%	0.5%	5.7%
27 PS Foam (#6)	0.5%	<0.1%	0.4%	0.6%
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	0.3%	0.2%	<0.1%	0.5%
<b>Total Plastic</b>	<b>13.4%</b>			
<b>METAL</b>				
30 Aluminum Beverage Containers	1.2%	0.6%	0.7%	1.8%
31 Other Aluminum	0.6%	<0.1%	0.5%	0.6%
32 Ferrous ("Tin") Cans	0.2%	0.2%	<0.1%	0.4%
33 Other Ferrous Scarp	0.7%	0.8%	<0.1%	1.5%
34 Other Non-Ferrous Scrap	<0.1%	<0.1%	<0.1%	<0.1%
35 Other Metal	0.3%	0.3%	<0.1%	0.6%
<b>Total Metals</b>	<b>3.0%</b>			

Table 29. South Central Multi-Family Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	1.0%	0.6%	0.4%	1.6%
37 Colored Containers - Beverage	0.8%	0.8%	<0.1%	1.5%
38 Glass Food Containers	0.9%	1.3%	<0.1%	2.2%
39 Other Glass	0.2%	0.2%	<0.1%	0.4%
<b>Total Glass</b>	<b>2.9%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	3.8%	6.6%	<0.1%	10.1%
41 Yard Materials - >6"	<0.1%	<0.1%	<0.1%	<0.1%
42 Food Scraps (Not Traditionally Edible)	7.6%	7.5%	0.4%	14.8%
43 Wasted Food	14.7%	6.8%	8.3%	21.1%
44 Diapers	4.4%	3.4%	1.2%	7.7%
45 Animal Waste/Kitty Litter	3.1%	3.2%	0.1%	6.1%
46 Bottom Fines/Dirt	1.8%	3.1%	<0.1%	4.7%
47 Other Organic Material	2.6%	1.3%	1.4%	3.8%
<b>Total Organics</b>	<b>38.0%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.1%	<0.1%	<0.1%	<0.1%
49 Untreated Clean Dimensional Lumber	<0.1%	0.2%	<0.1%	0.2%
50 Unpainted Engineered Wood	3.0%	<0.1%	<0.1%	<0.1%
51 Painted/Stained Wood	0.9%	5.2%	<0.1%	5.8%
52 Other Recyclable Wood	<0.1%	1.5%	<0.1%	1.4%
53 Rock, Concrete, Brick	<0.1%	<0.1%	<0.1%	<0.1%
54 Gypsum Wallboard - Demo	0.2%	<0.1%	<0.1%	<0.1%
55 Gypsum Wallboard - Clean Scrap	<0.1%	0.3%	<0.1%	0.3%
56 Roofing Shingles	<0.1%	<0.1%	<0.1%	<0.1%
57 PVC	<0.1%	<0.1%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	<0.1%	<0.1%	<0.1%	<0.1%
59 Other CDD	1.6%	<0.1%	<0.1%	<0.1%
<b>Total Construction &amp; Demolition</b>	<b>5.7%</b>			

Table 29. South Central Multi-Family Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

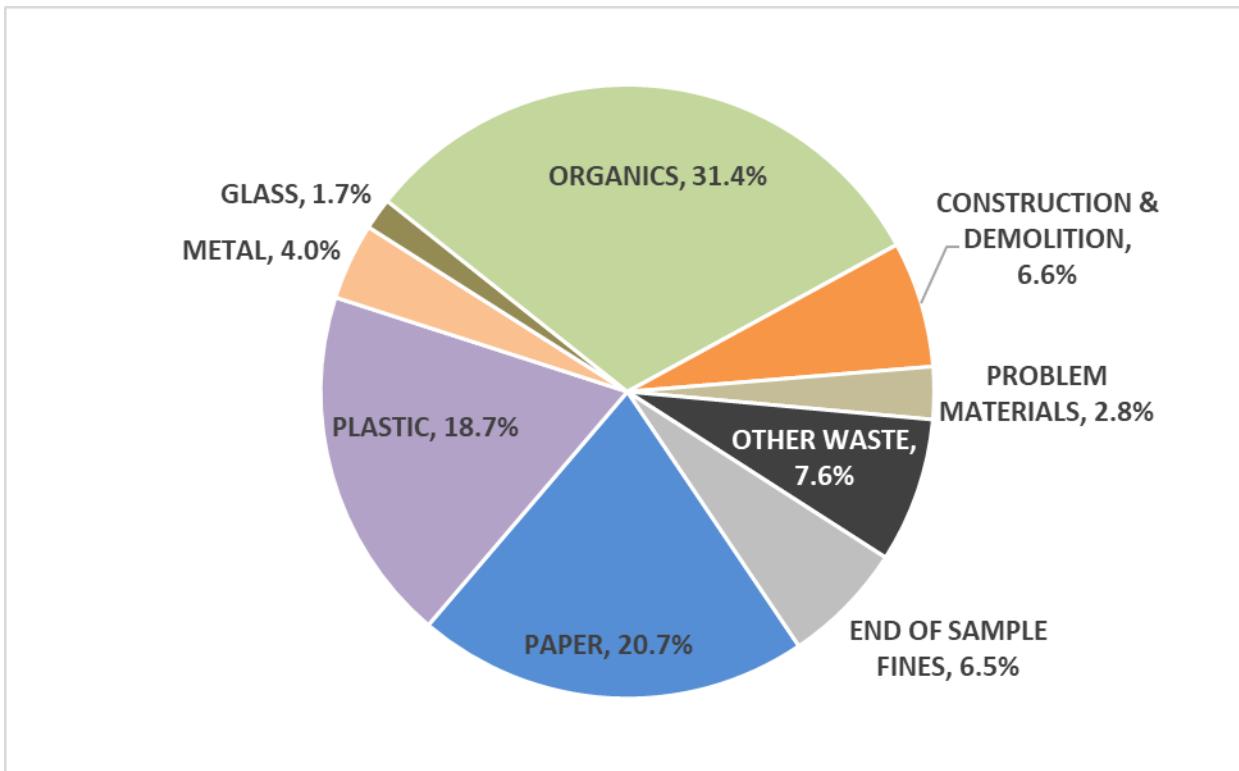
<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	1.4%	2.4%	<0.1%	3.7%
62 Other Banned Electronic Equipment	0.5%	0.8%	<0.1%	1.2%
63 Non-Banned Electronic Equipment	0.1%	0.2%	<0.1%	0.3%
64 Small Electrical Appliances	2.4%	4.2%	<0.1%	6.3%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	<0.1%	<0.1%	<0.1%	<0.1%
73 Automotive Used Oil/Filters	<0.1%	<0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	<0.1%	<0.1%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	<0.1%	<0.1%	<0.1%	<0.1%
76 Other Problem Materials	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Problem Materials</b>	<b>4.5%</b>			
<b>OTHER WASTE</b>				
77 Textiles	4.9%	5.0%	0.2%	9.6%
78 Carpet	<0.1%	<0.1%	<0.1%	<0.1%
79 Carpet Padding	<0.1%	<0.1%	<0.1%	<0.1%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	<0.1%	<0.1%	<0.1%	<0.1%
84 Aerosol Cans	<0.1%	0.1%	<0.1%	0.2%
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>5.0%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	1.4%	1.5%	<0.1%	2.8%
Other Plastic	2.6%	3.0%	<0.1%	5.5%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	1.5%	1.5%	0.1%	2.9%
Food Scraps	<0.1%	<0.1%	<0.1%	<0.1%
Wasted Food	<0.1%	<0.1%	<0.1%	<0.1%
Other Organics	1.8%	1.1%	0.7%	2.8%
<b>TOTALS</b>	<b>7.3%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 3 samples

## ICI

**Exhibit 22** provides a summary of the nine material categories that comprise the Category 1 MSW disposed by the ICI generating sector in the South Central region. Data is provided for each category as a percentage of the total weight. As indicated, organic waste composes the largest portion of the waste stream at 31.4 percent, followed by paper at 20.7 percent, and plastic at 18.7 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 22. South Central ICI Waste Composition



**Table 30** provides a detailed profile of the ICI MSW composition by weight for the South Central region that includes the percent contribution of all material components. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 30. South Central ICI Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	0.8%	1.9%	0.2%	1.4%
2 High Grade Office Paper	0.6%	0.6%	0.4%	0.7%
3 Magazines/Catalogs	0.4%	0.7%	0.2%	0.6%
4 Uncoated OCC - Recyclable	3.2%	4.4%	1.9%	4.6%
5 Coated OCC	0.4%	1.4%	<0.1%	0.8%
6 Boxboard	0.7%	0.6%	0.5%	0.9%
7 Cartons - Aseptic/Gable Top Containers	0.9%	3.3%	<0.1%	1.9%
8 Mixed Paper - Recyclable	4.4%	6.3%	2.4%	6.3%
9 Compostable Paper	4.6%	3.8%	3.4%	5.7%
10 Other Paper	4.8%	7.5%	2.5%	7.1%
<b>Total Paper</b>	<b>20.7%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	1.2%	1.0%	0.9%	1.5%
12 Natural HDPE (#2) Bottles	0.6%	1.2%	0.2%	0.9%
13 Colored HDPE (#2) Bottles	0.4%	0.7%	0.2%	0.6%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.4%	0.6%	0.2%	0.6%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	0.1%	0.3%	<0.1%	0.2%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	0.8%	0.8%	0.5%	1.0%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.2%	0.3%	0.1%	0.3%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.8%	1.2%	0.4%	1.1%
21 Rigid Non-Packaging	1.6%	2.1%	0.9%	2.2%
22 Bulky Rigid Plastics	1.6%	3.3%	0.6%	2.6%
23 PE Recyclable Film	0.8%	0.9%	0.5%	1.1%
24 Agricultural Film	<0.1%	0.2%	<0.1%	0.1%
25 Pouches	<0.1%	0.3%	<0.1%	0.2%
26 Other Flexible Films	8.4%	5.5%	6.7%	10.1%
27 PS Foam (#6)	0.8%	1.2%	0.4%	1.2%
28 Compostable Plastics	<0.1%	0.5%	<0.1%	0.2%
29 Other Plastics	0.9%	1.2%	0.6%	1.3%
<b>Total Plastic</b>	<b>18.7%</b>			
<b>METAL</b>				
30 Aluminum Beverage Containers	0.8%	0.9%	0.5%	1.0%
31 Other Aluminum	0.2%	0.3%	0.1%	0.3%
32 Ferrous ("Tin") Cans	0.5%	0.7%	0.3%	0.7%
33 Other Ferrous Scrap	1.8%	3.6%	0.7%	2.9%
34 Other Non-Ferrous Scrap	<0.1%	0.2%	<0.1%	0.1%
35 Other Metal	0.7%	1.5%	0.3%	1.1%
<b>Total Metals</b>	<b>4.0%</b>			

Table 30. South Central ICI Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Lower</b>	<b>90% Confidence Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	1.0%	0.6%	0.4%	1.6%
37 Colored Containers - Beverage	0.8%	0.8%	<0.1%	1.5%
38 Glass Food Containers	0.9%	1.3%	<0.1%	2.2%
39 Other Glass	0.2%	0.2%	<0.1%	0.4%
<b>Total Glass</b>	<b>2.9%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	3.8%	6.6%	<0.1%	10.1%
41 Yard Materials - >6"	<0.1%	<0.1%	<0.1%	<0.1%
42 Food Scraps (Not Traditionally Edible)	7.6%	7.5%	0.4%	14.8%
43 Wasted Food	14.7%	6.8%	8.3%	21.1%
44 Diapers	4.4%	3.4%	1.2%	7.7%
45 Animal Waste/Kitty Litter	3.1%	3.2%	0.1%	6.1%
46 Bottom Fines/Dirt	1.8%	3.1%	<0.1%	4.7%
47 Other Organic Material	2.6%	1.3%	1.4%	3.8%
<b>Total Organics</b>	<b>38.0%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.1%	<0.1%	<0.1%	<0.1%
49 Untreated Clean Dimensional Lumber	<0.1%	0.2%	<0.1%	0.2%
50 Unpainted Engineered Wood	3.0%	<0.1%	<0.1%	<0.1%
51 Painted/Stained Wood	0.9%	5.2%	<0.1%	5.8%
52 Other Recyclable Wood	<0.1%	1.5%	<0.1%	1.4%
53 Rock, Concrete, Brick	<0.1%	<0.1%	<0.1%	<0.1%
54 Gypsum Wallboard - Demo	0.2%	<0.1%	<0.1%	<0.1%
55 Gypsum Wallboard - Clean Scrap	<0.1%	0.3%	<0.1%	0.3%
56 Roofing Shingles	<0.1%	<0.1%	<0.1%	<0.1%
57 PVC	<0.1%	<0.1%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	<0.1%	<0.1%	<0.1%	<0.1%
59 Other CDD	1.6%	<0.1%	<0.1%	<0.1%
<b>Total Construction &amp; Demolition</b>	<b>5.7%</b>			

Table 30. South Central ICI Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	1.4%	2.4%	<0.1%	3.7%
62 Other Banned Electronic Equipment	0.5%	0.8%	<0.1%	1.2%
63 Non-Banned Electronic Equipment	0.1%	0.2%	<0.1%	0.3%
64 Small Electrical Appliances	2.4%	4.2%	<0.1%	6.3%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	<0.1%	<0.1%	<0.1%	<0.1%
73 Automotive Used Oil/Filters	<0.1%	<0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	<0.1%	<0.1%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	<0.1%	<0.1%	<0.1%	<0.1%
76 Other Problem Materials	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Problem Materials</b>	<b>4.5%</b>			
<b>OTHER WASTE</b>				
77 Textiles	4.9%	5.0%	0.2%	9.6%
78 Carpet	<0.1%	<0.1%	<0.1%	<0.1%
79 Carpet Padding	<0.1%	<0.1%	<0.1%	<0.1%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	<0.1%	<0.1%	<0.1%	<0.1%
84 Aerosol Cans	<0.1%	0.1%	<0.1%	0.2%
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>5.0%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	1.4%	1.5%	<0.1%	2.8%
Other Plastic	2.6%	3.0%	<0.1%	5.5%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	1.5%	1.5%	0.1%	2.9%
Food Scraps	<0.1%	<0.1%	<0.1%	<0.1%
Wasted Food	<0.1%	<0.1%	<0.1%	<0.1%
Other Organics	1.8%	1.1%	0.7%	2.8%
<b>TOTALS</b>	<b>7.3%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

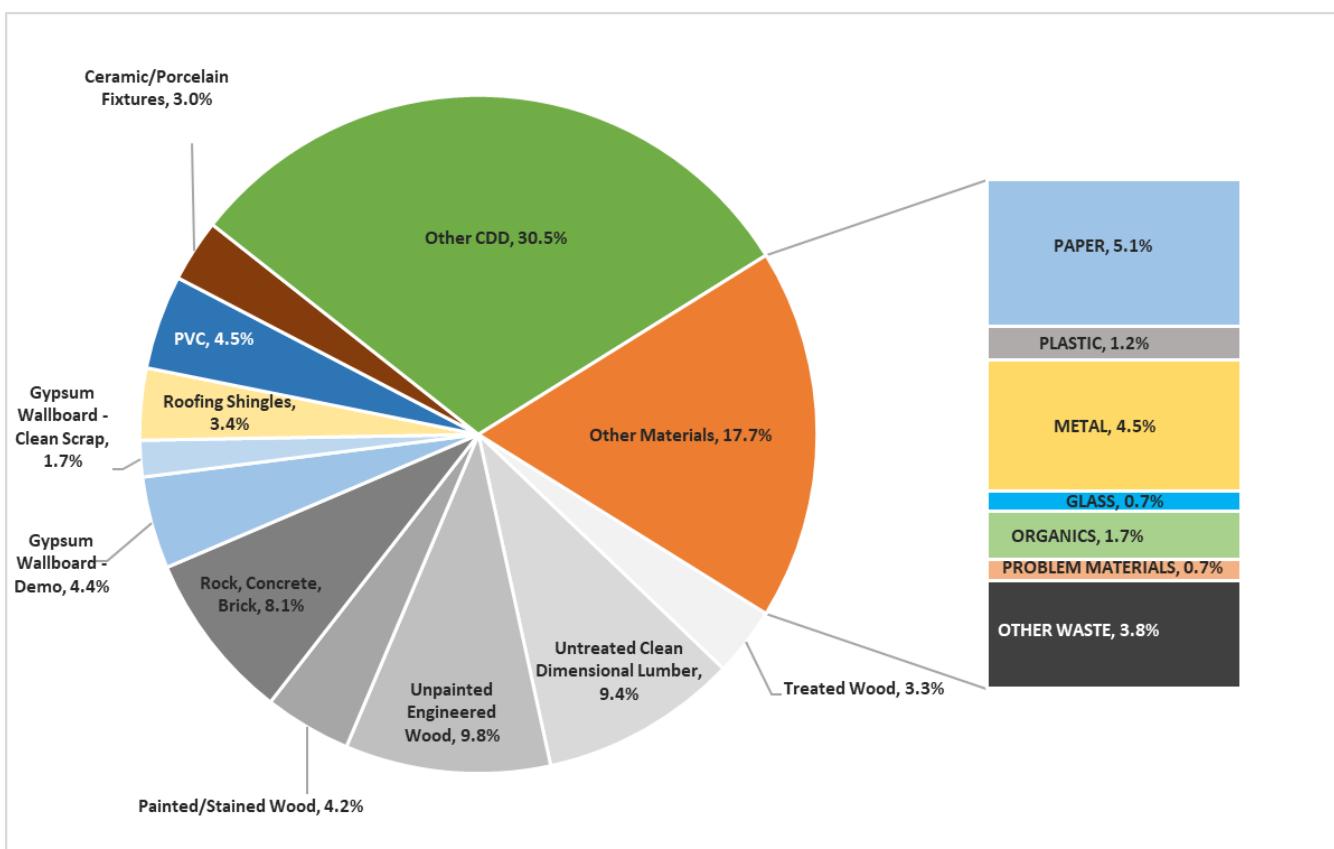
Note: Composition based on 3 samples

## Category 25 Construction and Demolition Debris (CDD)

**Exhibit 23** provides a summary of the nine material categories that comprise the Category 25 CDD disposed in the South Central region. Data is provided for each category as a percentage of the total by weight. CDD comprises 82.3 percent of the waste stream and non-CDD materials comprise 17.7 percent. The following materials comprise the largest portion of the CDD material stream:

- Other CDD – 30.5 percent
- Unpainted Engineered Wood – 9.8 percent
- Untreated Clean Dimensional Lumber – 9.4 percent
- Rock, Concrete, Brick – 8.1 percent

Exhibit 23. South Central Region CDD Waste Composition



**Table 31** provides a detailed profile of the South Central region CDD composition by weight that includes the percent contribution of all material components. For each material component, the mean percent is included. Standard statistical analysis of CDD materials is not provided due to the significant variation in the size and types of loads visually characterized as part of this portion of the Study. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 31. South Central Region CDD Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>PAPER</b>		
Newsprint (ONP)	0	<0.1%
High Grade Office Paper	0	<0.1%
Magazines/Catalogs	0	<0.1%
Uncoated OCC - Recyclable	3,800	4.1%
Coated OCC	100	0.1%
Boxboard	0	<0.1%
Cartons - Aseptic/Gable Top Containers	0	<0.1%
Mixed Paper - Recyclable	800	0.9%
Compostable Paper	0	<0.1%
Other Paper	0	<0.1%
<b>Total Paper</b>	<b>4,800</b>	<b>5.1%</b>
<b>PLASTIC</b>		
PET (#1) Bottles	0	<0.1%
Natural HDPE (#2) Bottles	0	<0.1%
Colored HDPE (#2) Bottles	0	<0.1%
PP (#5) Bottles	0	<0.1%
Other (#3, #4, #6, and #7) Bottles	0	<0.1%
PET(#1) Non-Bottle Rigid Containers &	0	<0.1%
HDPE (#2) Non-Bottle Rigid Containers	0	<0.1%
PP(#5) Non-Bottle Rigid Containers &	0	<0.1%
PS(#6) Non-Foam, Bottle Rigid	0	<0.1%
Other (#7)/Unidentifiable Non-Bottle	0	<0.1%
Rigid Non-Packaging	0	<0.1%
Bulky Rigid Plastics	200	0.2%
PE Recyclable Film	0	<0.1%
Agricultural Film	0	<0.1%
Pouches	0	<0.1%
Other Flexible Films	700	0.7%
PS Foam (#6)	100	<0.1%
Compostable Plastics	0	<0.1%
Other Plastics	200	0.2%
<b>Total Plastic</b>	<b>1,100</b>	<b>1.2%</b>

Table 31. South Central Region CDD Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>METAL</b>		
Aluminum Beverage Containers	0	<0.1%
Other Aluminum	0	<0.1%
Ferrous ("Tin") Cans	0	<0.1%
Other Ferrous Scrap	1,700	1.8%
Other Non-Ferrous Scrap	0	<0.1%
Other Metal	2,500	2.7%
<b>Total Metals</b>	<b>4,300</b>	<b>4.5%</b>
<b>GLASS</b>		
Clear Containers - Beverage	0	<0.1%
Colored Containers - Beverage	0	<0.1%
Glass Food Containers	0	<0.1%
Other Glass	600	0.7%
<b>Total Glass</b>	<b>700</b>	<b>0.7%</b>
<b>ORGANICS</b>		
Yard Materials - <6"	200	0.2%
Yard Materials - >6"	100	<0.1%
Food Scraps (Not Traditionally Edible)	0	<0.1%
Wasted Food	0	<0.1%
Diapers	0	<0.1%
Animal Waste/Kitty Litter	0	<0.1%
Bottom Fines/Dirt	1,300	1.3%
Other Organic Material	0	<0.1%
<b>Total Organics</b>	<b>1,600</b>	<b>1.7%</b>

Table 31. South Central Region CDD Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>CONSTRUCTION &amp; DEMOLITION</b>		
Treated Wood	3,100	3.3%
Untreated Clean Dimensional Lumber	8,800	9.4%
Unpainted Engineered Wood	9,200	9.8%
Painted/Stained Wood	3,900	4.2%
Other Recyclable Wood	0	<0.1%
Rock, Concrete, Brick	7,500	8.1%
Gypsum Wallboard - Demo	4,100	4.4%
Gypsum Wallboard - Clean Scrap	1,600	1.7%
Roofing Shingles	3,200	3.4%
PVC	4,200	4.5%
Ceramics/Porcelain Fixtures	2,800	3.0%
Other CDD	28,600	30.5%
<b>Total Construction &amp; Demolition</b>	<b>77,100</b>	<b>82.3%</b>
<b>PROBLEM MATERIALS</b>		
Televisions - CRT	0	<0.1%
Televisions - Non-CRT	0	<0.1%
Other Banned Electronic Equipment	0	<0.1%
Non-Banned Electronic Equipment	0	<0.1%
Small Electrical Appliances	0	<0.1%
White Goods - Refrigerated	0	<0.1%
White Goods - Non-Refrigerated	0	<0.1%
Lead Acid Batteries	0	<0.1%
Other Batteries	0	<0.1%
Fluorescent Light Tubes	0	<0.1%
Compact Fluorescent Light Bulbs	0	<0.1%
Tires	100	0.1%
Paint	500	0.5%
Automotive Used Oil/Filters	0	<0.1%
Household Hazardous Waste	0	<0.1%
Sharps, Needles, Lancets	0	<0.1%
Other Problem Materials	100	<0.1%
<b>Total Problem Materials</b>	<b>700</b>	<b>0.7%</b>

Table 31. South Central Region CDD Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>OTHER WASTE</b>		
Textiles	100	<0.1%
Carpet	500	0.5%
Carpet Padding	100	0.1%
Wood Pallets	1,900	2.1%
Bulky Items	300	0.3%
Mattresses and Box Springs	0	<0.1%
Wood Furniture	600	0.6%
Aerosol Cans	0	<0.1%
Compressed Gas Containers	0	<0.1%
<b>Total Other Waste</b>	<b>3,500</b>	<b>3.8%</b>
<b>TOTALS</b>	<b>93,800</b>	<b>100.0%</b>

Note: Composition based on 162 samples

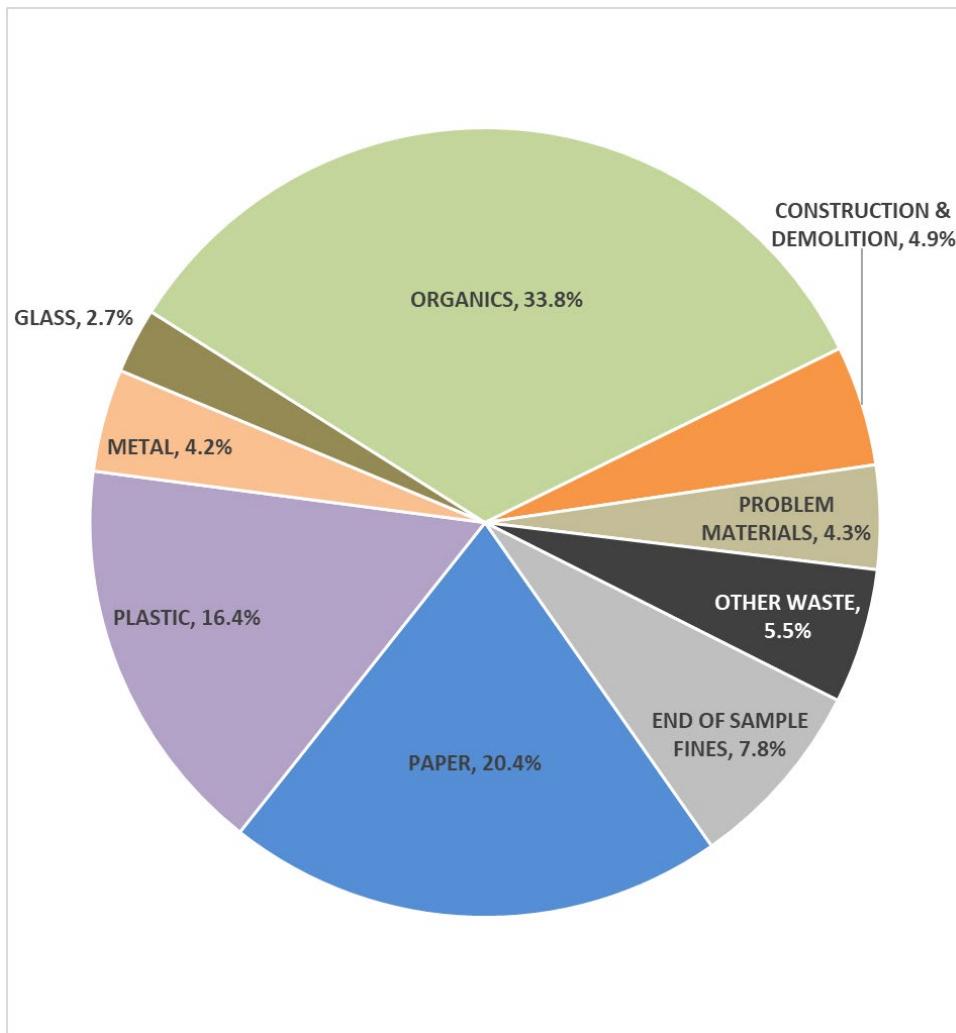
## SOUTHEAST REGION WASTE COMPOSITION

### Category 1 MSW

#### Overall

**Exhibit 24** provides a summary of the nine material categories that compose the overall Category 1 MSW disposed in the Southeast region. Data is provided for each category as a percentage of the total weight. Note that the overall waste composition includes waste from the Single family residential, multi-family, and ICI waste generating sectors only. CDD composition is presented separately. As indicated, organic waste composes the largest portion of the waste stream at 33.8 percent, followed by paper at 20.4 percent, and plastic at 16.4 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 24. Overall Southeast Region Waste Composition



**Table 32** provides the detailed breakdown of the composition by weight for all material components measured as part of this Study for the Southeast region. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 32. Overall Southeast Region Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>					
1 Newsprint (ONP)	11,600	0.8%	1.1%	0.7%	1.0%
2 High Grade Office Paper	21,400	1.5%	2.0%	1.2%	1.8%
3 Magazines/Catalogs	14,200	1.0%	1.3%	0.8%	1.2%
4 Uncoated OCC - Recyclable	36,700	2.6%	3.2%	2.1%	3.1%
5 Coated OCC	1,800	0.1%	0.5%	<0.1%	0.2%
6 Boxboard	24,300	1.7%	1.0%	1.6%	1.9%
7 Cartons - Aseptic/Gable Top Containers	3,600	0.3%	0.4%	0.2%	0.3%
8 Mixed Paper - Recyclable	72,300	5.2%	2.6%	4.7%	5.6%
9 Compostable Paper	72,300	5.2%	2.2%	4.8%	5.5%
10 Other Paper	27,400	2.0%	1.8%	1.7%	2.2%
<b>Total Paper</b>	<b>285,500</b>	<b>20.4%</b>			
<b>PLASTIC</b>					
11 PET (#1) Bottles	21,100	1.5%	1.4%	1.3%	1.7%
12 Natural HDPE (#2) Bottles	4,000	0.3%	0.4%	0.2%	0.3%
13 Colored HDPE (#2) Bottles	8,000	0.6%	0.7%	0.5%	0.7%
14 PP (#5) Bottles	400	<0.1%	0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	0	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	8,200	0.6%	0.5%	0.5%	0.7%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	600	<0.1%	0.1%	<0.1%	<0.1%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	18,000	1.3%	1.4%	1.1%	1.5%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	5,600	0.4%	0.6%	0.3%	0.5%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	4,600	0.3%	0.5%	0.3%	0.4%
21 Rigid Non-Packaging	19,600	1.4%	2.8%	1.0%	1.8%
22 Bulky Rigid Plastics	8,600	0.6%	1.9%	0.3%	0.9%
23 PE Recyclable Film	12,500	0.9%	0.8%	0.8%	1.0%
24 Agricultural Film	1,200	<0.1%	0.5%	<0.1%	0.2%
25 Pouches	800	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	91,800	6.5%	3.0%	6.1%	7.0%
27 PS Foam (#6)	12,700	0.9%	0.7%	0.8%	1.0%
28 Compostable Plastics	200	<0.1%	0.1%	<0.1%	<0.1%
29 Other Plastics	12,400	0.9%	1.3%	0.7%	1.1%
<b>Total Plastic</b>	<b>230,200</b>	<b>16.4%</b>			
<b>METAL</b>					
30 Aluminum Beverage Containers	9,700	0.7%	0.7%	0.6%	0.8%
31 Other Aluminum	10,700	0.8%	2.8%	0.3%	1.2%
32 Ferrous ("Tin") Cans	7,700	0.5%	0.5%	0.5%	0.6%
33 Other Ferrous Scrap	11,500	0.8%	1.6%	0.6%	1.1%
34 Other Non-Ferrous Scrap	300	<0.1%	0.1%	<0.1%	<0.1%
35 Other Metal	19,000	1.4%	2.5%	1.0%	1.7%
<b>Total Metals</b>	<b>58,900</b>	<b>4.2%</b>			

Table 32. Overall Southeast Region Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>					
36 Clear Containers - Beverage	10,200	0.7%	0.9%	0.6%	0.9%
37 Colored Containers - Beverage	10,000	0.7%	1.0%	0.6%	0.9%
38 Glass Food Containers	7,000	0.5%	0.6%	0.4%	0.6%
39 Other Glass	10,400	0.7%	1.5%	0.5%	1.0%
<b>Total Glass</b>	<b>37,500</b>	<b>2.7%</b>			
<b>ORGANICS</b>					
40 Yard Materials - <6"	20,900	1.5%	4.1%	0.8%	2.1%
41 Yard Materials - >6"	3,300	0.2%	0.9%	<0.1%	0.4%
42 Food Scraps (Not Traditionally Edible)	88,200	6.3%	4.4%	5.6%	7.0%
43 Wasted Food	216,100	15.4%	8.2%	14.1%	16.7%
44 Diapers	48,400	3.5%	3.2%	3.0%	4.0%
45 Animal Waste/Kitty Litter	52,800	3.8%	6.3%	2.8%	4.8%
46 Bottom Fines/Dirt	13,500	1.0%	2.7%	0.5%	1.4%
47 Other Organic Material	29,900	2.1%	2.4%	1.8%	2.5%
<b>Total Organics</b>	<b>473,000</b>	<b>33.8%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>					
48 Treated Wood	3,800	0.3%	0.7%	0.2%	0.4%
49 Untreated Clean Dimensional Lumber	7,400	0.5%	1.4%	0.3%	0.7%
50 Unpainted Engineered Wood	10,600	0.8%	1.7%	0.5%	1.0%
51 Painted/Stained Wood	8,800	0.6%	1.5%	0.4%	0.9%
52 Other Recyclable Wood	1,100	<0.1%	0.3%	<0.1%	0.1%
53 Rock, Concrete, Brick	1,700	0.1%	0.6%	<0.1%	0.2%
54 Gypsum Wallboard - Demo	11,600	0.8%	2.7%	0.4%	1.3%
55 Gypsum Wallboard - Clean Scrap	1,400	0.1%	0.7%	<0.1%	0.2%
56 Roofing Shingles	2,100	0.2%	1.2%	<0.1%	0.3%
57 PVC	1,300	<0.1%	0.5%	<0.1%	0.2%
58 Ceramics/Porcelain Fixtures	3,100	0.2%	1.1%	<0.1%	0.4%
59 Other CDD	16,000	1.1%	2.2%	0.8%	1.5%
<b>Total Construction &amp; Demolition</b>	<b>69,000</b>	<b>4.9%</b>			

Table 32. Overall Southeast Region Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>					
60 Televisions - CRT	400	<0.1%	0.3%	<0.1%	<0.1%
61 Televisions - Non-CRT	0	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	4,000	0.3%	1.0%	0.1%	0.4%
63 Non-Banned Electronic Equipment	4,900	0.4%	0.7%	0.2%	0.5%
64 Small Electrical Appliances	9,000	0.6%	1.7%	0.4%	0.9%
65 White Goods - Refrigerated	0	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refrigerated	0	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	0	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	1,000	<0.1%	0.2%	<0.1%	<0.1%
69 Fluorescent Light Tubes	0	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	300	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	5,100	0.4%	2.6%	<0.1%	0.8%
72 Paint	2,800	0.2%	0.7%	<0.1%	0.3%
73 Automotive Used Oil/Filters	100	<0.1%	0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	1,500	0.1%	0.6%	<0.1%	0.2%
75 Sharps, Needles, Lancets	100	<0.1%	<0.1%	<0.1%	<0.1%
76 Other Problem Materials	30,400	2.2%	5.7%	1.3%	3.1%
<b>Total Problem Materials</b>	<b>59,600</b>	<b>4.3%</b>			
<b>OTHER WASTE</b>					
77 Textiles	64,900	4.6%	4.1%	4.0%	5.3%
78 Carpet	8,800	0.6%	2.9%	0.2%	1.1%
79 Carpet Padding	1,100	<0.1%	0.5%	<0.1%	0.2%
80 Wood Pallets	0	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	0	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	0	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	0	<0.1%	<0.1%	<0.1%	<0.1%
84 Aerosol Cans	2,200	0.2%	0.2%	0.1%	0.2%
85 Compressed Gas Containers	500	<0.1%	0.2%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>77,500</b>	<b>5.5%</b>			
<b>END OF SAMPLE FINES</b>					
Other Paper	10,300	0.7%	0.8%	0.6%	0.9%
Other Plastic	6,300	0.5%	0.6%	0.4%	0.6%
Other Glass	0	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	47,300	3.4%	3.6%	2.8%	4.0%
Food Scraps	10,300	0.7%	1.0%	0.6%	0.9%
Wasted Food	8,500	0.6%	0.9%	0.5%	0.7%
Other Organics	27,200	1.9%	2.7%	1.5%	2.4%
<b>TOTALS</b>	<b>109,900</b>	<b>7.8%</b>			
<b>TOTALS</b>	<b>1,401,100</b>	<b>100.0%</b>			

Note: Composition based on 109 samples

## Single Family Residential

Exhibit 25 provides a summary of the nine material categories that compose the Category 1 Single family residential MSW disposed in the Southeast region. Data is provided for each category as a percentage of the total. As indicated, organic waste composes the largest portion of the waste stream at 35.8 percent, followed by paper at 18.9 percent, and plastic at 15.4 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 25. Southeast Region Single family residential Waste Composition

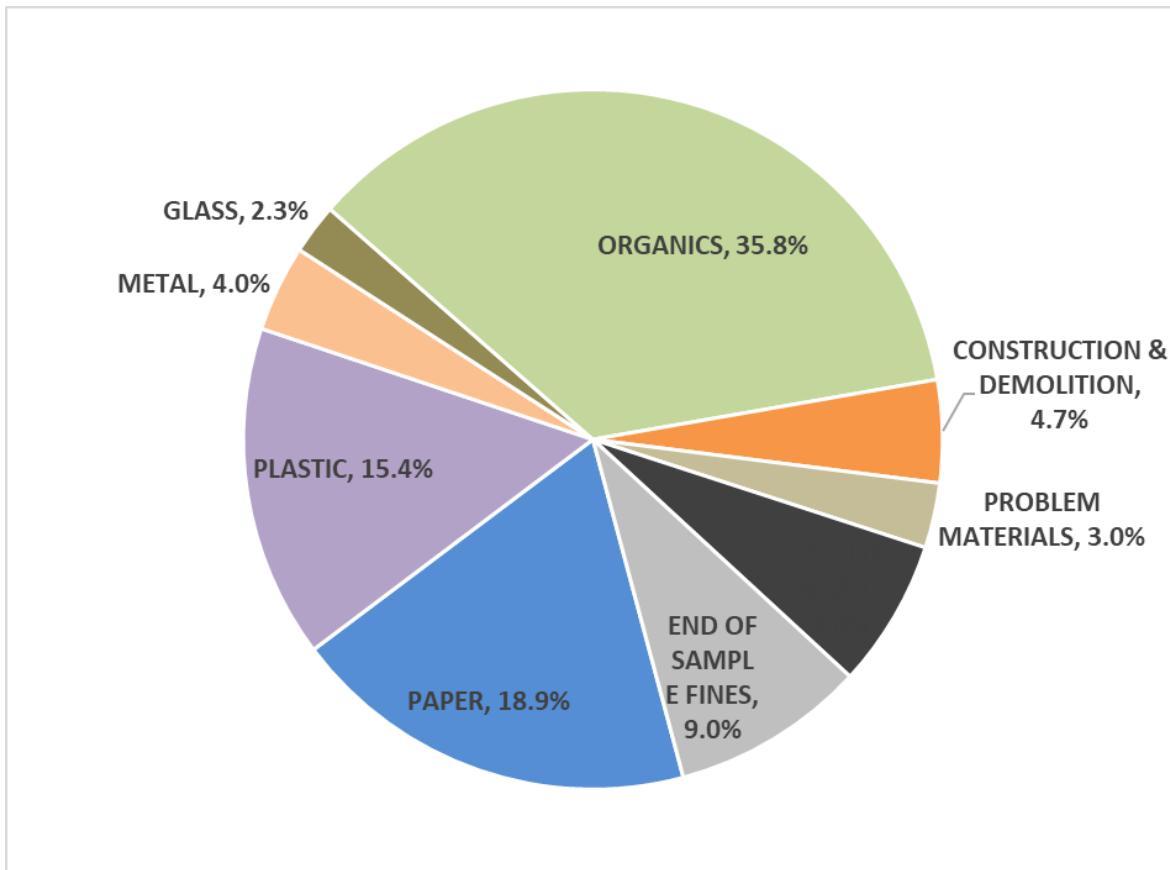


Table 33 provides a detailed profile of the MSW Single family residential composition that includes the percent contribution of all material components in the Southeast region. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 33. Southeast Region Single Family Residential Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	0.8%	0.9%	0.6%	1.0%
2 High Grade Office Paper	1.2%	1.3%	0.9%	1.5%
3 Magazines/Catalogs	1.2%	1.3%	0.9%	1.5%
4 Uncoated OCC - Recyclable	1.5%	1.9%	1.1%	2.0%
5 Coated OCC	0.2%	0.6%	<0.1%	0.3%
6 Boxboard	1.8%	1.1%	1.6%	2.0%
7 Cartons - Aseptic/Gable Top Containers	0.2%	0.2%	0.2%	0.2%
8 Mixed Paper - Recyclable	5.3%	2.8%	4.7%	5.9%
9 Compostable Paper	4.8%	1.6%	4.4%	5.1%
10 Other Paper	1.9%	1.4%	1.6%	2.2%
<b>Total Paper</b>	<b>18.9%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	1.4%	1.6%	1.1%	1.8%
12 Natural HDPE (#2) Bottles	0.2%	0.3%	0.1%	0.2%
13 Colored HDPE (#2) Bottles	0.5%	0.6%	0.4%	0.7%
14 PP (#5) Bottles	<0.1%	0.2%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.7%	0.5%	0.5%	0.8%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	<0.1%	<0.1%	<0.1%	<0.1%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	1.2%	0.5%	1.1%	1.3%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.3%	0.4%	0.2%	0.4%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.3%	0.4%	0.3%	0.4%
21 Rigid Non-Packaging	1.2%	1.4%	0.9%	1.6%
22 Bulky Rigid Plastics	0.4%	1.1%	0.2%	0.6%
23 PE Recyclable Film	1.0%	0.9%	0.8%	1.2%
24 Agricultural Film	<0.1%	0.5%	<0.1%	0.2%
25 Pouches	<0.1%	0.1%	<0.1%	<0.1%
26 Other Flexible Films	6.0%	2.5%	5.5%	6.6%
27 PS Foam (#6)	1.0%	0.8%	0.8%	1.1%
28 Compostable Plastics	<0.1%	0.2%	<0.1%	<0.1%
29 Other Plastics	0.9%	1.5%	0.6%	1.2%
<b>Total Plastic</b>	<b>15.4%</b>			
<b>METAL</b>				
30 Aluminum Beverage Containers	0.6%	0.6%	0.5%	0.7%
31 Other Aluminum	0.5%	0.4%	0.4%	0.6%
32 Ferrous ("Tin") Cans	0.6%	0.4%	0.5%	0.7%
33 Other Ferrous Scrap	0.9%	1.6%	0.5%	1.2%
34 Other Non-Ferrous Scrap	<0.1%	<0.1%	<0.1%	<0.1%
35 Other Metal	1.4%	2.6%	0.9%	2.0%
<b>Total Metals</b>	<b>4.0%</b>			

Table 33. Southeast Region Single Family Residential Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	0.5%	0.6%	0.3%	0.6%
37 Colored Containers - Beverage	0.6%	0.8%	0.4%	0.8%
38 Glass Food Containers	0.6%	0.5%	0.5%	0.7%
39 Other Glass	0.7%	1.3%	0.4%	1.0%
<b>Total Glass</b>	<b>2.3%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	1.6%	4.0%	0.7%	2.5%
41 Yard Materials - >6"	0.3%	1.2%	<0.1%	0.6%
42 Food Scraps (Not Traditionally Edible)	6.7%	3.5%	5.9%	7.5%
43 Wasted Food	15.5%	7.8%	13.8%	17.3%
44 Diapers	4.0%	3.1%	3.3%	4.7%
45 Animal Waste/Kitty Litter	4.3%	6.3%	2.9%	5.7%
46 Bottom Fines/Dirt	1.1%	2.7%	0.5%	1.7%
47 Other Organic Material	2.2%	2.3%	1.7%	2.7%
<b>Total Organics</b>	<b>35.8%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.3%	0.7%	0.1%	0.4%
49 Untreated Clean Dimensional Lumber	0.4%	0.7%	0.2%	0.5%
50 Unpainted Engineered Wood	0.6%	1.1%	0.3%	0.8%
51 Painted/Stained Wood	0.7%	1.6%	0.4%	1.1%
52 Other Recyclable Wood	0.1%	0.4%	<0.1%	0.2%
53 Rock, Concrete, Brick	0.2%	0.7%	<0.1%	0.3%
54 Gypsum Wallboard - Demo	0.9%	2.8%	0.3%	1.5%
55 Gypsum Wallboard - Clean Scrap	0.1%	0.7%	<0.1%	0.3%
56 Roofing Shingles	<0.1%	0.3%	<0.1%	<0.1%
57 PVC	<0.1%	0.3%	<0.1%	0.1%
58 Ceramics/Porcelain Fixtures	<0.1%	0.3%	<0.1%	0.1%
59 Other CDD	1.4%	2.3%	0.8%	1.9%
<b>Total Construction &amp; Demolition</b>	<b>4.7%</b>			

Table 33. Southeast Region Single Family Residential Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

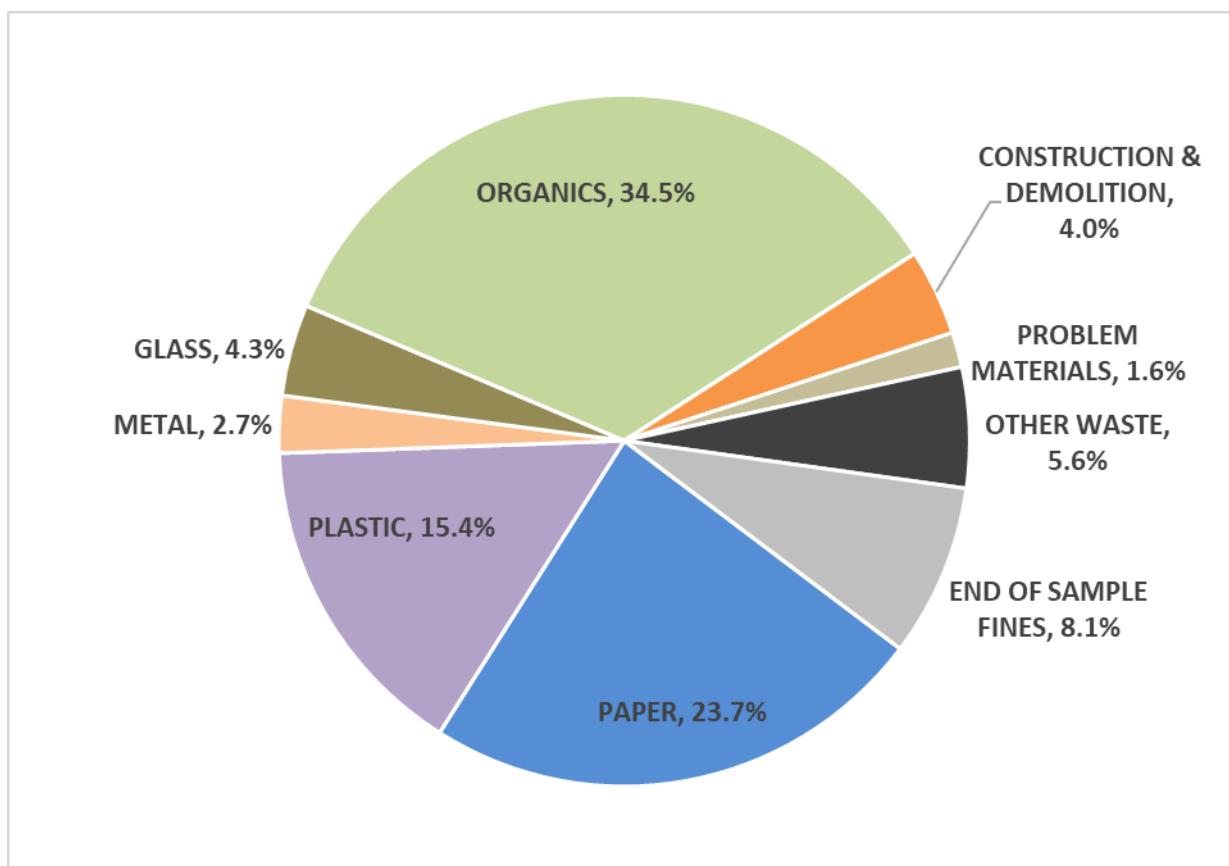
<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	0.4%	1.2%	0.1%	0.6%
63 Non-Banned Electronic Equipment	0.4%	0.7%	0.2%	0.5%
64 Small Electrical Appliances	0.9%	2.1%	0.4%	1.4%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	<0.1%	0.2%	<0.1%	0.1%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	0.3%	0.9%	0.1%	0.5%
73 Automotive Used Oil/Filters	<0.1%	<0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	0.2%	0.8%	<0.1%	0.3%
75 Sharps, Needles, Lancets	<0.1%	<0.1%	<0.1%	<0.1%
76 Other Problem Materials	0.8%	3.1%	<0.1%	1.4%
<b>Total Problem Materials</b>	<b>3.0%</b>			
<b>OTHER WASTE</b>				
77 Textiles	5.5%	3.9%	4.6%	6.4%
78 Carpet	1.1%	4.0%	0.2%	1.9%
79 Carpet Padding	<0.1%	0.4%	<0.1%	0.2%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	<0.1%	<0.1%	<0.1%	<0.1%
84 Aerosol Cans	0.2%	0.2%	0.1%	0.2%
85 Compressed Gas Containers	<0.1%	0.2%	<0.1%	0.1%
<b>Total Other Waste</b>	<b>6.8%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	0.9%	1.0%	0.6%	1.1%
Other Plastic	0.5%	0.7%	0.3%	0.7%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	4.0%	3.6%	3.2%	4.8%
Food Scraps	0.9%	1.0%	0.7%	1.1%
Wasted Food	0.8%	0.9%	0.6%	1.0%
Other Organics	2.0%	3.0%	1.3%	2.6%
<b>TOTALS</b>	<b>9.0%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 55 samples

## Multi-Family

**Exhibit 26** provides a summary of the nine material categories that comprise the Category 1 MSW disposed by the multi-family generating sector in the Southeast region. Data is provided for each category as a percentage of the total. As indicated, organic waste comprises the largest portion of the waste stream at 34.5 percent, followed by paper at 23.7 percent, and plastic at 15.4 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 26. Southeast Region Multi-Family Waste Composition



**Table 34** provides a detailed profile of the multi-family MSW composition that includes the percent contribution of all material components for the Southeast region. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 34. Southeast Region Multi-Family Waste Composition – Detailed  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	1.0%	0.6%	0.4%	1.6%
2 High Grade Office Paper	1.8%	2.0%	<0.1%	3.7%
3 Magazines/Catalogs	0.2%	0.3%	<0.1%	0.5%
4 Uncoated OCC - Recyclable	5.2%	6.1%	<0.1%	11.0%
5 Coated OCC	<0.1%	<0.1%	<0.1%	<0.1%
6 Boxboard	2.1%	1.4%	0.8%	3.5%
7 Cartons - Aseptic/Gable Top Containers	0.2%	0.1%	<0.1%	0.3%
8 Mixed Paper - Recyclable	7.0%	3.0%	4.1%	9.8%
9 Compostable Paper	4.2%	0.3%	4.0%	4.4%
10 Other Paper	2.0%	0.6%	1.4%	2.6%
<b>Total Paper</b>	<b>23.7%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	1.3%	0.4%	0.9%	1.7%
12 Natural HDPE (#2) Bottles	0.2%	0.3%	<0.1%	0.4%
13 Colored HDPE (#2) Bottles	0.7%	0.3%	0.4%	0.9%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	1.1%	0.5%	0.6%	1.5%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	<0.1%	<0.1%	<0.1%	0.1%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	0.6%	0.2%	0.4%	0.7%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	1.1%	0.2%	0.9%	1.3%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	<0.1%	<0.1%	<0.1%	<0.1%
21 Rigid Non-Packaging	1.9%	2.1%	<0.1%	3.9%
22 Bulky Rigid Plastics	0.8%	0.7%	0.1%	1.5%
23 PE Recyclable Film	0.8%	0.6%	0.3%	1.4%
24 Agricultural Film	<0.1%	<0.1%	<0.1%	<0.1%
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	5.0%	0.6%	4.3%	5.6%
27 PS Foam (#6)	1.1%	0.6%	0.5%	1.6%
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	0.9%	1.6%	<0.1%	2.4%
<b>Total Plastic</b>	<b>15.4%</b>			
<b>METAL</b>				
30 Aluminum Beverage Containers	0.3%	0.1%	0.1%	0.4%
31 Other Aluminum	0.4%	0.2%	0.2%	0.6%
32 Ferrous ("Tin") Cans	1.2%	0.3%	0.9%	1.5%
33 Other Ferrous Scrap	0.8%	0.8%	<0.1%	1.5%
34 Other Non-Ferrous Scrap	<0.1%	<0.1%	<0.1%	<0.1%
35 Other Metal	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Metals</b>	<b>2.7%</b>			

Table 34. Southeast Region Multi-Family Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	<0.1%	0.1%	<0.1%	0.2%
37 Colored Containers - Beverage	0.9%	1.2%	<0.1%	2.1%
38 Glass Food Containers	0.3%	0.3%	<0.1%	0.5%
39 Other Glass	3.1%	4.6%	<0.1%	7.5%
<b>Total Glass</b>	<b>4.3%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	0.2%	0.3%	<0.1%	0.5%
41 Yard Materials - >6"	<0.1%	<0.1%	<0.1%	<0.1%
42 Food Scraps (Not Traditionally Edible)	7.9%	3.2%	4.9%	10.9%
43 Wasted Food	8.0%	3.2%	5.0%	11.0%
44 Diapers	4.3%	2.1%	2.3%	6.3%
45 Animal Waste/Kitty Litter	5.0%	6.8%	<0.1%	11.5%
46 Bottom Fines/Dirt	3.9%	6.8%	<0.1%	10.4%
47 Other Organic Material	5.1%	6.4%	<0.1%	11.1%
<b>Total Organics</b>	<b>34.5%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.4%	<0.1%	<0.1%	<0.1%
49 Untreated Clean Dimensional Lumber	0.6%	0.4%	0.2%	0.9%
50 Unpainted Engineered Wood	0.2%	1.0%	<0.1%	1.1%
51 Painted/Stained Wood	0.4%	0.3%	0.1%	0.8%
52 Other Recyclable Wood	<0.1%	0.8%	<0.1%	0.7%
53 Rock, Concrete, Brick	<0.1%	<0.1%	<0.1%	<0.1%
54 Gypsum Wallboard - Demo	0.7%	<0.1%	<0.1%	<0.1%
55 Gypsum Wallboard - Clean Scrap	<0.1%	1.1%	<0.1%	1.1%
56 Roofing Shingles	<0.1%	<0.1%	<0.1%	<0.1%
57 PVC	<0.1%	<0.1%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	<0.1%	<0.1%	<0.1%	<0.1%
59 Other CDD	1.8%	<0.1%	<0.1%	<0.1%
<b>Total Construction &amp; Demolition</b>	<b>4.0%</b>			

Table 34. Southeast Region Multi-Family Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

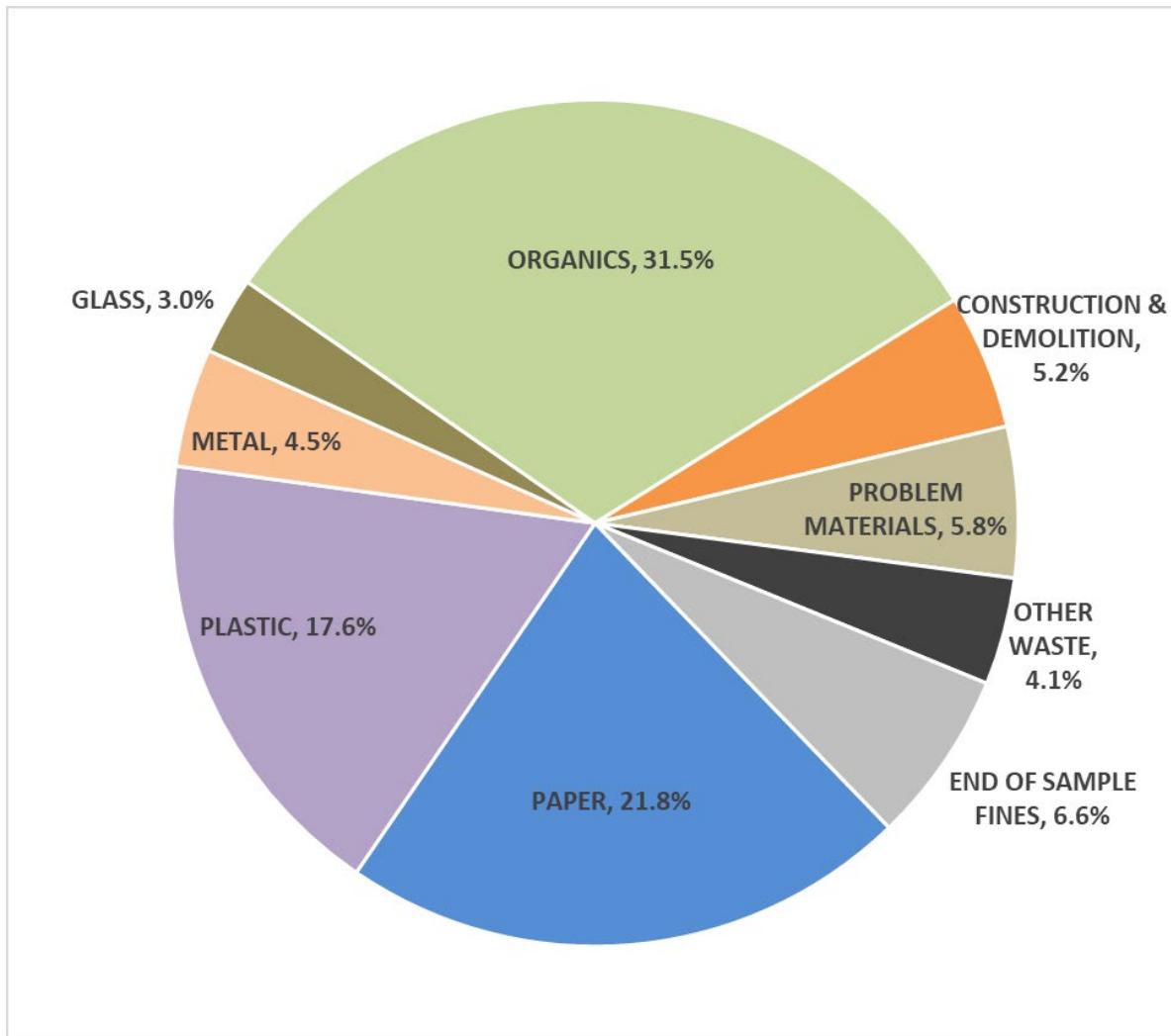
<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	<0.1%	0.1%	<0.1%	0.2%
63 Non-Banned Electronic Equipment	0.5%	0.5%	<0.1%	1.0%
64 Small Electrical Appliances	0.9%	1.6%	<0.1%	2.5%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	<0.1%	0.1%	<0.1%	0.2%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	<0.1%	<0.1%	<0.1%	<0.1%
73 Automotive Used Oil/Filters	<0.1%	<0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	<0.1%	<0.1%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	<0.1%	<0.1%	<0.1%	<0.1%
76 Other Problem Materials	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Problem Materials</b>	<b>1.6%</b>			
<b>OTHER WASTE</b>				
77 Textiles	5.2%	5.9%	<0.1%	10.8%
78 Carpet	0.4%	0.7%	<0.1%	1.0%
79 Carpet Padding	<0.1%	<0.1%	<0.1%	<0.1%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	<0.1%	<0.1%	<0.1%	<0.1%
84 Aerosol Cans	<0.1%	<0.1%	<0.1%	<0.1%
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>5.6%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	<0.1%	<0.1%	<0.1%	<0.1%
Other Plastic	<0.1%	<0.1%	<0.1%	<0.1%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	4.0%	6.9%	<0.1%	10.5%
Food Scraps	1.4%	1.5%	<0.1%	2.8%
Wasted Food	0.7%	0.8%	<0.1%	1.5%
Other Organics	2.0%	1.7%	0.4%	3.6%
<b>TOTALS</b>	<b>8.1%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 3 samples

## ICI

**Exhibit 27** provides a summary of the nine material categories that comprise the Category 1 MSW disposed by the ICI generating sector in the Southeast region. Data is provided for each category as a percentage of the total. As indicated, organic waste composes the largest portion of the waste stream at 31.5 percent, followed by paper at 21.8 percent, and plastic at 17.6 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 27. Southeast Region ICI Waste Composition



**Table 35** provides a detailed profile of the ICI MSW composition that includes the percent contribution of all material components in the Southeast region. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 35. Southeast Region ICI Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	0.8%	1.3%	0.5%	1.1%
2 High Grade Office Paper	1.9%	2.5%	1.3%	2.5%
3 Magazines/Catalogs	0.9%	1.2%	0.6%	1.2%
4 Uncoated OCC - Recyclable	3.6%	3.8%	2.7%	4.5%
5 Coated OCC	<0.1%	0.2%	<0.1%	0.1%
6 Boxboard	1.6%	1.0%	1.4%	1.9%
7 Cartons - Aseptic/Gable Top Containers	0.3%	0.6%	0.2%	0.5%
8 Mixed Paper - Recyclable	4.9%	2.4%	4.3%	5.4%
9 Compostable Paper	5.6%	2.7%	5.0%	6.3%
10 Other Paper	2.0%	2.1%	1.5%	2.5%
<b>Total Paper</b>	<b>21.8%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	1.6%	1.1%	1.4%	1.9%
12 Natural HDPE (#2) Bottles	0.4%	0.5%	0.3%	0.5%
13 Colored HDPE (#2) Bottles	0.6%	0.9%	0.4%	0.8%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.5%	0.5%	0.4%	0.6%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	<0.1%	0.1%	<0.1%	<0.1%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	1.4%	2.0%	0.9%	1.9%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.5%	0.7%	0.3%	0.6%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.3%	0.5%	0.2%	0.4%
21 Rigid Non-Packaging	1.5%	3.8%	0.7%	2.4%
22 Bulky Rigid Plastics	0.8%	2.5%	0.3%	1.4%
23 PE Recyclable Film	0.8%	0.8%	0.6%	1.0%
24 Agricultural Film	<0.1%	0.5%	<0.1%	0.2%
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	7.2%	3.5%	6.4%	8.0%
27 PS Foam (#6)	0.8%	0.7%	0.7%	1.0%
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	0.9%	1.2%	0.6%	1.2%
<b>Total Plastic</b>	<b>17.6%</b>			
<b>METAL</b>				
30 Aluminum Beverage Containers	0.8%	0.8%	0.7%	1.0%
31 Other Aluminum	1.1%	4.1%	0.1%	2.0%
32 Ferrous ("Tin") Cans	0.5%	0.5%	0.4%	0.6%
33 Other Ferrous Scrap	0.8%	1.7%	0.4%	1.2%
34 Other Non-Ferrous Scrap	<0.1%	0.2%	<0.1%	<0.1%
35 Other Metal	1.3%	2.4%	0.8%	1.9%
<b>Total Metals</b>	<b>4.5%</b>			

Table 35. Southeast Region ICI Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	1.0%	1.1%	0.8%	1.3%
37 Colored Containers - Beverage	0.8%	1.2%	0.5%	1.1%
38 Glass Food Containers	0.4%	0.6%	0.3%	0.6%
39 Other Glass	0.7%	1.4%	0.4%	1.0%
<b>Total Glass</b>	<b>3.0%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	1.4%	4.3%	0.4%	2.4%
41 Yard Materials - >6"	0.2%	0.5%	<0.1%	0.3%
42 Food Scraps (Not Traditionally Edible)	5.7%	5.2%	4.6%	6.9%
43 Wasted Food	15.7%	8.6%	13.7%	17.7%
44 Diapers	2.8%	3.2%	2.0%	3.5%
45 Animal Waste/Kitty Litter	3.1%	6.4%	1.6%	4.6%
46 Bottom Fines/Dirt	0.6%	2.2%	0.1%	1.1%
47 Other Organic Material	1.9%	2.2%	1.4%	2.4%
<b>Total Organics</b>	<b>31.5%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	0.2%	0.7%	<0.1%	0.4%
49 Untreated Clean Dimensional Lumber	0.7%	1.8%	0.3%	1.1%
50 Unpainted Engineered Wood	1.0%	2.3%	0.5%	1.5%
51 Painted/Stained Wood	0.5%	1.5%	0.2%	0.9%
52 Other Recyclable Wood	<0.1%	0.2%	<0.1%	<0.1%
53 Rock, Concrete, Brick	<0.1%	0.6%	<0.1%	0.2%
54 Gypsum Wallboard - Demo	0.8%	2.7%	0.2%	1.4%
55 Gypsum Wallboard - Clean Scrap	0.1%	0.8%	<0.1%	0.3%
56 Roofing Shingles	0.3%	1.8%	<0.1%	0.7%
57 PVC	0.1%	0.6%	<0.1%	0.3%
58 Ceramics/Porcelain Fixtures	0.4%	1.5%	<0.1%	0.7%
59 Other CDD	0.9%	2.0%	0.4%	1.3%
<b>Total Construction &amp; Demolition</b>	<b>5.2%</b>			

Table 35. Southeast Region ICI Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	0.4%	<0.1%	0.2%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	0.2%	0.8%	<0.1%	0.4%
63 Non-Banned Electronic Equipment	0.3%	0.7%	0.2%	0.5%
64 Small Electrical Appliances	0.3%	0.9%	0.1%	0.6%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	<0.1%	0.1%	<0.1%	<0.1%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	0.8%	3.8%	<0.1%	1.7%
72 Paint	<0.1%	0.3%	<0.1%	0.1%
73 Automotive Used Oil/Filters	<0.1%	0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	<0.1%	0.3%	<0.1%	0.1%
75 Sharps, Needles, Lancets	<0.1%	<0.1%	<0.1%	<0.1%
76 Other Problem Materials	3.8%	7.4%	2.1%	5.5%
<b>Total Problem Materials</b>	<b>5.8%</b>			
<b>OTHER WASTE</b>				
77 Textiles	3.7%	4.1%	2.7%	4.6%
78 Carpet	0.2%	0.8%	<0.1%	0.3%
79 Carpet Padding	<0.1%	0.6%	<0.1%	0.2%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	<0.1%	<0.1%	<0.1%	<0.1%
84 Aerosol Cans	0.1%	0.2%	<0.1%	0.2%
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>4.1%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	0.6%	0.6%	0.5%	0.8%
Other Plastic	0.4%	0.5%	0.3%	0.5%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	2.7%	3.4%	1.9%	3.5%
Food Scraps	0.5%	1.0%	0.3%	0.7%
Wasted Food	0.4%	0.9%	0.2%	0.6%
Other Organics	1.9%	2.5%	1.3%	2.5%
<b>TOTALS</b>	<b>6.6%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

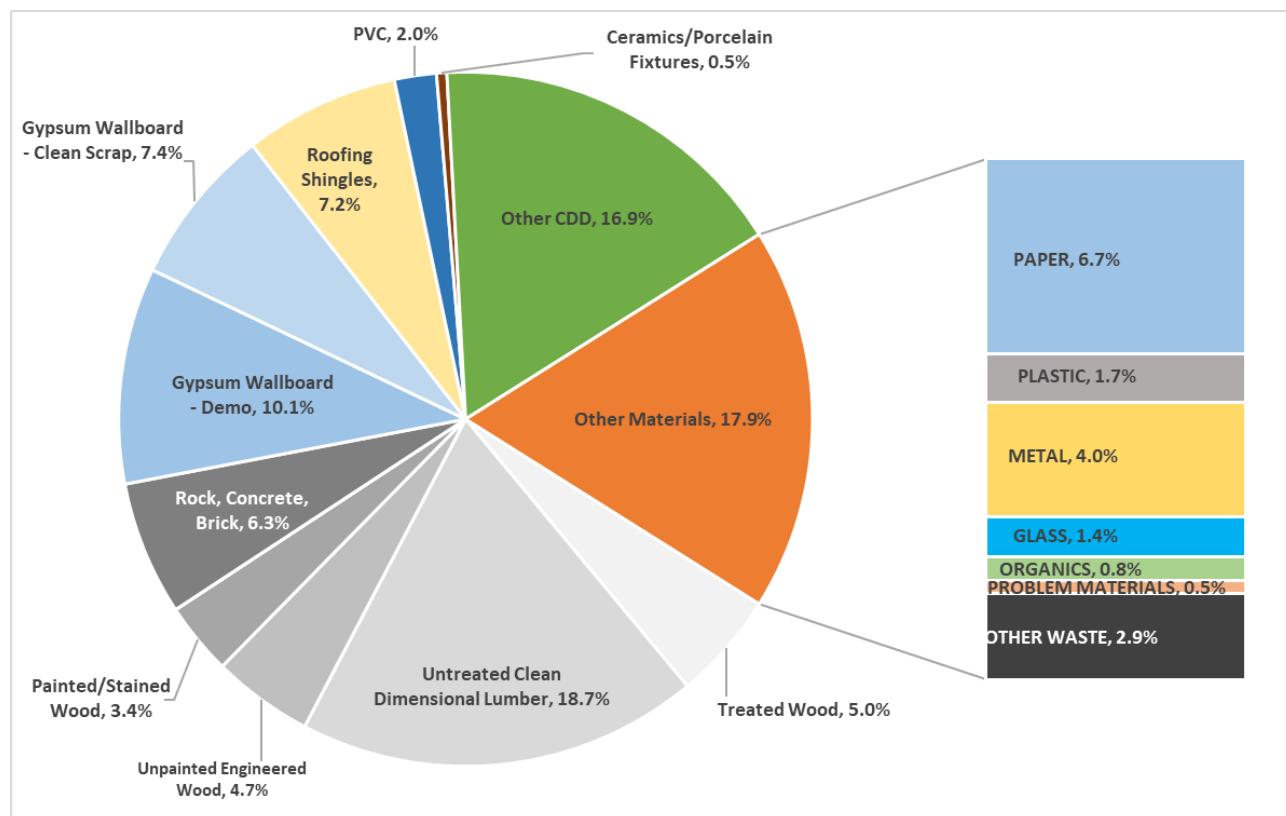
Note: Composition based on 51 samples

## Category 25 Construction and Demolition Debris (CDD)

**Exhibit 28** provides a summary of the nine material categories that comprise the Category 25 CDD disposed in the Southeast region. Data is provided for each category as a percentage of the total. As expected, CDD comprises the largest portion of the CDD waste stream at 82.1 percent. The following CDD materials comprise the largest portion of the 82.1 percent CDD material stream:

- Untreated Clean Dimensional Lumber – 18.7 percent
- Other CDD – 16.9 percent
- Gypsum Wallboard – Demo – 10.1 percent
- Gypsum Wallboard – Clean – 7.4 percent
- Roofing Shingles – 7.2 percent
- Rock, Concrete, Brick – 6.3 percent

Exhibit 28. Southeast Region CDD Waste Composition



**Table 36** provides a detailed profile of the Southeast region CDD composition that includes the percent contribution of all material components. For each material component, the mean percent is included. Standard statistical analysis of CDD materials is not provided due to the significant variation in the size and types of loads visually characterized as part of this portion of the Study. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 36. Southeast Region CDD Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>PAPER</b>		
Newsprint (ONP)	0	<0.1%
High Grade Office Paper	0	<0.1%
Magazines/Catalogs	0	<0.1%
Uncoated OCC - Recyclable	8,700	5.7%
Coated OCC	700	0.5%
Boxboard	700	0.4%
Cartons - Aseptic/Gable Top Containers	0	<0.1%
Mixed Paper - Recyclable	100	<0.1%
Compostable Paper	0	<0.1%
Other Paper	0	<0.1%
<b>Total Paper</b>	<b>10,200</b>	<b>6.7%</b>
<b>PLASTIC</b>		
PET (#1) Bottles	0	<0.1%
Natural HDPE (#2) Bottles	0	<0.1%
Colored HDPE (#2) Bottles	0	<0.1%
PP (#5) Bottles	0	<0.1%
Other (#3, #4, #6, and #7) Bottles	0	<0.1%
PET(#1) Non-Bottle Rigid Containers &	0	<0.1%
HDPE (#2) Non-Bottle Rigid Containers	0	<0.1%
PP(#5) Non-Bottle Rigid Containers &	0	<0.1%
PS(#6) Non-Foam, Bottle Rigid	0	<0.1%
Other (#7)/Unidentifiable Non-Bottle	0	<0.1%
Rigid Non-Packaging	200	0.1%
Bulky Rigid Plastics	400	0.2%
PE Recyclable Film	0	<0.1%
Agricultural Film	0	<0.1%
Pouches	0	<0.1%
Other Flexible Films	1,100	0.7%
PS Foam (#6)	400	0.3%
Compostable Plastics	0	<0.1%
Other Plastics	500	0.3%
<b>Total Plastic</b>	<b>2,600</b>	<b>1.7%</b>

Table 36. Southeast Region CDD Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>METAL</b>		
Aluminum Beverage Containers	0	<0.1%
Other Aluminum	0	<0.1%
Ferrous ("Tin") Cans	0	<0.1%
Other Ferrous Scrap	4,800	3.1%
Other Non-Ferrous Scrap	1,000	0.7%
Other Metal	200	0.1%
<b>Total Metals</b>	<b>6,100</b>	<b>4.0%</b>
<b>GLASS</b>		
Clear Containers - Beverage	0	<0.1%
Colored Containers - Beverage	0	<0.1%
Glass Food Containers	0	<0.1%
Other Glass	2,100	1.4%
<b>Total Glass</b>	<b>2,100</b>	<b>1.4%</b>
<b>ORGANICS</b>		
Yard Materials - <6"	300	0.2%
Yard Materials - >6"	100	<0.1%
Food Scraps (Not Traditionally Edible)	0	<0.1%
Wasted Food	0	<0.1%
Diapers	0	<0.1%
Animal Waste/Kitty Litter	0	<0.1%
Bottom Fines/Dirt	600	0.4%
Other Organic Material	200	0.1%
<b>Total Organics</b>	<b>1,200</b>	<b>0.8%</b>

Table 36. Southeast Region CDD Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>CONSTRUCTION &amp; DEMOLITION</b>		
Treated Wood	7,700	5.0%
Untreated Clean Dimensional Lumber	28,700	18.7%
Unpainted Engineered Wood	7,200	4.7%
Painted/Stained Wood	5,200	3.4%
Other Recyclable Wood	0	<0.1%
Rock, Concrete, Brick	9,600	6.3%
Gypsum Wallboard - Demo	15,400	10.1%
Gypsum Wallboard - Clean Scrap	11,300	7.4%
Roofing Shingles	11,100	7.2%
PVC	3,000	2.0%
Ceramics/Porcelain Fixtures	700	0.5%
Other CDD	25,900	16.9%
<b>Total Construction &amp; Demolition</b>	<b>125,800</b>	<b>82.1%</b>
<b>PROBLEM MATERIALS</b>		
Televisions - CRT	0	<0.1%
Televisions - Non-CRT	0	<0.1%
Other Banned Electronic Equipment	0	<0.1%
Non-Banned Electronic Equipment	0	<0.1%
Small Electrical Appliances	200	0.1%
White Goods - Refridgerated	0	<0.1%
White Goods - Non-Refridgerated	0	<0.1%
Lead Acid Batteries	0	<0.1%
Other Batteries	0	<0.1%
Fluorescent Light Tubes	0	<0.1%
Compact Fluorescent Light Bulbs	0	<0.1%
Tires	100	<0.1%
Paint	100	<0.1%
Automotive Used Oil/Filters	0	<0.1%
Household Hazardous Waste	0	<0.1%
Sharps, Needles, Lancets	0	<0.1%
Other Problem Materials	300	0.2%
<b>Total Problem Materials</b>	<b>700</b>	<b>0.5%</b>

Table 36. Southeast Region CDD Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>OTHER WASTE</b>		
Textiles	100	<0.1%
Carpet	2,300	1.5%
Carpet Padding	1,300	0.9%
Wood Pallets	0	<0.1%
Bulky Items	0	<0.1%
Mattresses and Box Springs	400	0.3%
Wood Furniture	400	0.2%
Aerosol Cans	0	<0.1%
Compressed Gas Containers	0	<0.1%
<b>Total Other Waste</b>	<b>4,500</b>	<b>2.9%</b>
<b>TOTALS</b>		
	<b>153,200</b>	<b>100.0%</b>

Note: Composition based on 245 samples

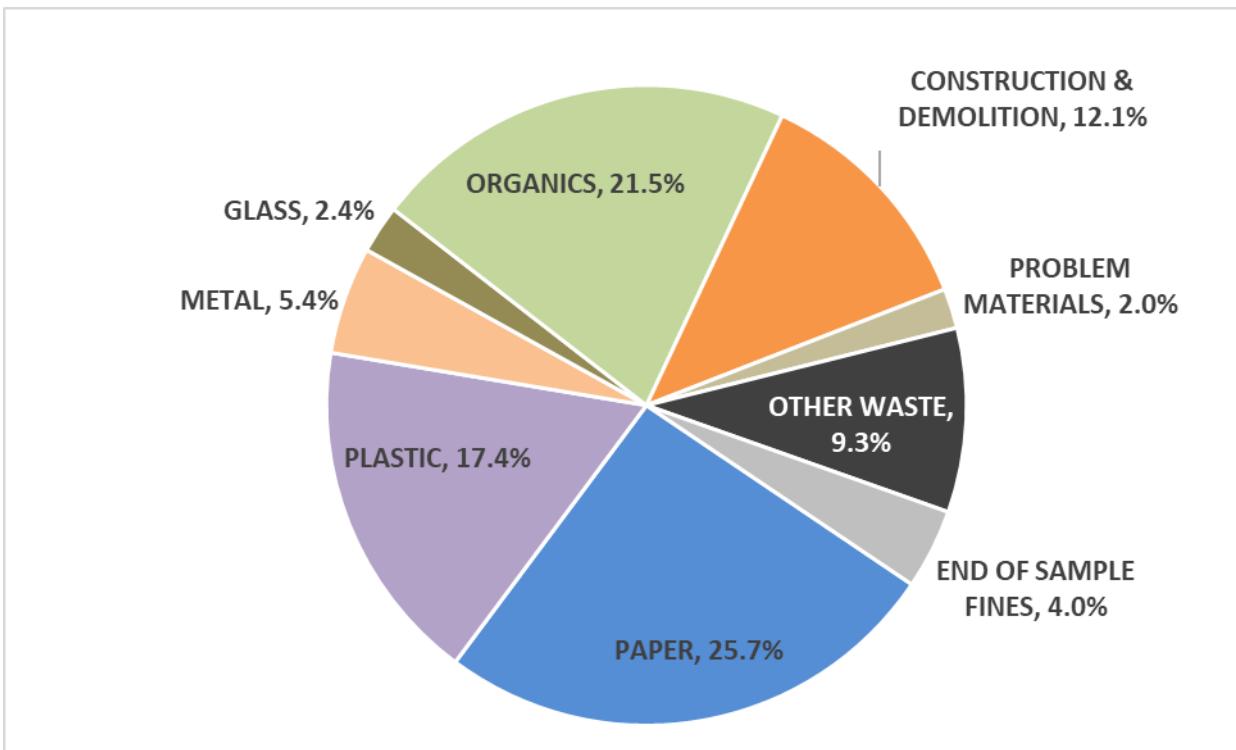
## WEST CENTRAL REGION WASTE COMPOSITION

### Category 1 MSW

#### Overall

Exhibit 29 provides a summary of the nine material categories that comprise the overall Category 1 MSW disposed in the West Central Region. Data is provided for each category as a percentage of the total. Note that the overall waste composition includes waste from the Single family residential, multi-family, and ICI waste generating sectors only. CDD composition is presented separately. As indicated, paper comprises the largest portion of the waste stream at 25.7 percent, followed by organics at 21.5 percent, and plastic at 17.4 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

### Exhibit 29. West Central Region Waste Composition



**Table 37** provides the detailed breakdown of the composition for all material components measured as part of this Study for the West Central region. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 37. West Central Region Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>					
1 Newsprint (ONP)	8,000	1.2%	5.0%	0.3%	2.1%
2 High Grade Office Paper	12,900	1.9%	3.8%	1.2%	2.6%
3 Magazines/Catalogs	4,500	0.7%	2.0%	0.3%	1.0%
4 Uncoated OCC - Recyclable	43,100	6.3%	14.1%	3.8%	8.9%
5 Coated OCC	1,000	0.1%	0.9%	<0.1%	0.3%
6 Boxboard	8,300	1.2%	1.3%	1.0%	1.5%
7 Cartons - Aseptic/Gable Top Containers	2,500	0.4%	0.8%	0.2%	0.5%
8 Mixed Paper - Recyclable	50,200	7.4%	14.6%	4.7%	10.0%
9 Compostable Paper	24,200	3.5%	5.2%	2.6%	4.5%
10 Other Paper	20,700	3.0%	7.0%	1.8%	4.3%
<b>Total Paper</b>	<b>175,400</b>	<b>25.7%</b>			
<b>PLASTIC</b>					
11 PET (#1) Bottles	9,500	1.4%	1.4%	1.1%	1.6%
12 Natural HDPE (#2) Bottles	1,700	0.3%	0.4%	0.2%	0.3%
13 Colored HDPE (#2) Bottles	2,200	0.3%	0.5%	0.2%	0.4%
14 PP (#5) Bottles	100	<0.1%	0.2%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	100	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	1,600	0.2%	0.4%	0.2%	0.3%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	900	0.1%	0.3%	<0.1%	0.2%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	8,900	1.3%	1.2%	1.1%	1.5%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	1,900	0.3%	0.5%	0.2%	0.4%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	2,500	0.4%	0.4%	0.3%	0.4%
21 Rigid Non-Packaging	16,200	2.4%	3.1%	1.8%	2.9%
22 Bulky Rigid Plastics	6,300	0.9%	1.9%	0.6%	1.3%
23 PE Recyclable Film	3,500	0.5%	0.6%	0.4%	0.6%
24 Agricultural Film	1,400	0.2%	1.2%	<0.1%	0.4%
25 Pouches	100	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	49,600	7.3%	5.7%	6.3%	8.3%
27 PS Foam (#6)	3,800	0.6%	0.7%	0.4%	0.7%
28 Compostable Plastics	100	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	8,300	1.2%	2.7%	0.7%	1.7%
<b>Total Plastic</b>	<b>118,900</b>	<b>17.4%</b>			
<b>METAL</b>					
30 Aluminum Beverage Containers	4,200	0.6%	0.7%	0.5%	0.7%
31 Other Aluminum	1,200	0.2%	0.3%	0.1%	0.2%
32 Ferrous ("Tin") Cans	3,000	0.4%	0.5%	0.3%	0.5%
33 Other Ferrous Scrap	16,200	2.4%	5.4%	1.4%	3.3%
34 Other Non-Ferrous Scrap	300	<0.1%	0.3%	<0.1%	0.1%
35 Other Metal	12,000	1.8%	3.3%	1.2%	2.4%
<b>Total Metals</b>	<b>37,000</b>	<b>5.4%</b>			

Table 37. West Central Region Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
				<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>					
36 Clear Containers - Beverage	3,100	0.5%	0.6%	0.3%	0.6%
37 Colored Containers - Beverage	2,100	0.3%	0.6%	0.2%	0.4%
38 Glass Food Containers	1,900	0.3%	0.5%	0.2%	0.4%
39 Other Glass	9,500	1.4%	5.0%	0.5%	2.3%
<b>Total Glass</b>	<b>16,600</b>	<b>2.4%</b>			
<b>ORGANICS</b>					
40 Yard Materials - <6"	3,100	0.5%	2.0%	<0.1%	0.8%
41 Yard Materials - >6"	800	0.1%	0.4%	<0.1%	0.2%
42 Food Scraps (Not Traditionally Edible)	19,600	2.9%	4.7%	2.0%	3.7%
43 Wasted Food	87,800	12.9%	14.8%	10.2%	15.6%
44 Diapers	14,700	2.2%	2.8%	1.6%	2.7%
45 Animal Waste/Kitty Litter	5,800	0.9%	1.9%	0.5%	1.2%
46 Bottom Fines/Dirt	2,400	0.4%	1.6%	<0.1%	0.7%
47 Other Organic Material	12,000	1.8%	2.5%	1.3%	2.2%
<b>Total Organics</b>	<b>146,300</b>	<b>21.5%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>					
48 Treated Wood	7,300	1.1%	2.8%	0.6%	1.6%
49 Untreated Clean Dimensional Lumber	16,800	2.5%	6.7%	1.3%	3.7%
50 Unpainted Engineered Wood	10,800	1.6%	9.3%	<0.1%	3.3%
51 Painted/Stained Wood	20,300	3.0%	10.7%	1.0%	4.9%
52 Other Recyclable Wood	6,400	0.9%	7.9%	<0.1%	2.4%
53 Rock, Concrete, Brick	200	<0.1%	0.2%	<0.1%	<0.1%
54 Gypsum Wallboard - Demo	8,500	1.3%	6.0%	0.2%	2.3%
55 Gypsum Wallboard - Clean Scrap	5,100	0.7%	6.8%	<0.1%	2.0%
56 Roofing Shingles	100	<0.1%	<0.1%	<0.1%	<0.1%
57 PVC	300	<0.1%	0.2%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	400	<0.1%	0.3%	<0.1%	0.1%
59 Other CDD	6,300	0.9%	2.9%	0.4%	1.4%
<b>Total Construction &amp; Demolition</b>	<b>82,500</b>	<b>12.1%</b>			

Table 37. West Central Region Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

Material Components	2020 Tons	Mean Composition	Standard Deviation	90% Confidence Limits	
				Lower	Upper
<b>PROBLEM MATERIALS</b>					
60 Televisions - CRT	0	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	0	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	2,000	0.3%	1.1%	<0.1%	0.5%
63 Non-Banned Electronic Equipment	2,900	0.4%	1.3%	0.2%	0.7%
64 Small Electrical Appliances	4,600	0.7%	2.1%	0.3%	1.0%
65 White Goods - Refridgerated	0	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	0	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	0	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	500	<0.1%	0.1%	<0.1%	0.1%
69 Fluorescent Light Tubes	0	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	0	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	1,500	0.2%	1.7%	<0.1%	0.5%
72 Paint	300	<0.1%	0.2%	<0.1%	<0.1%
73 Automotive Used Oil/Filters	100	<0.1%	0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	300	<0.1%	0.3%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	0	<0.1%	<0.1%	<0.1%	<0.1%
76 Other Problem Materials	1,500	0.2%	1.3%	<0.1%	0.5%
<b>Total Problem Materials</b>	<b>13,700</b>	<b>2.0%</b>			
<b>OTHER WASTE</b>					
77 Textiles	45,200	6.6%	8.9%	5.0%	8.2%
78 Carpet	4,600	0.7%	3.1%	0.1%	1.2%
79 Carpet Padding	1,500	0.2%	1.0%	<0.1%	0.4%
80 Wood Pallets	5,200	0.8%	4.0%	<0.1%	1.5%
81 Bulky Items	0	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	100	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	5,700	0.8%	3.9%	0.1%	1.5%
84 Aerosol Cans	1,000	0.1%	0.2%	0.1%	0.2%
85 Compressed Gas Containers	0	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>63,400</b>	<b>9.3%</b>			
<b>END OF SAMPLE FINES</b>					
Other Paper	3,500	0.5%	0.9%	0.3%	0.7%
Other Plastic	2,200	0.3%	0.8%	0.2%	0.5%
Other Glass	100	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	9,600	1.4%	2.5%	1.0%	1.9%
Food Scraps	5,800	0.9%	1.2%	0.6%	1.1%
Wasted Food	3,400	0.5%	0.8%	0.4%	0.7%
Other Organics	2,900	0.4%	1.0%	0.2%	0.6%
<b>TOTALS</b>	<b>27,500</b>	<b>4.0%</b>			
<b>TOTALS</b>	<b>681,300</b>	<b>100.0%</b>			

Note: Composition based on 83 samples

## Single Family Residential

Exhibit 30 provides a summary of the nine material categories that comprises the Category 1 Single family residential MSW disposed in the West Central region. Data is provided for each category as a percentage of the total. As indicated, organic waste comprises the largest portion of the waste stream at 24.9 percent, followed by paper at 20.4 percent, and plastic at 19.4 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 30. West Central Region Single family residential Waste Composition

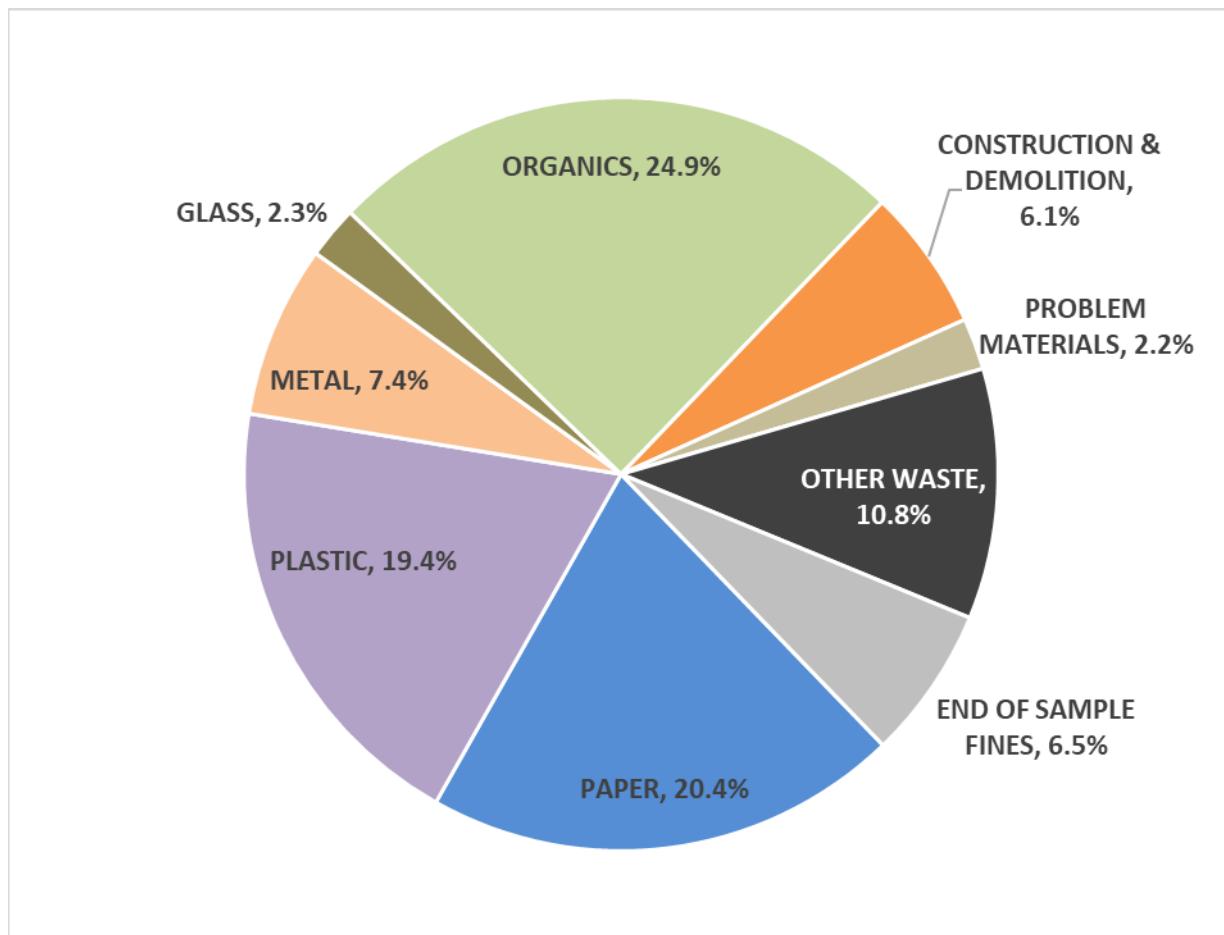


Table 38 provides a detailed profile of the MSW Single family residential composition that includes the percent contribution of all material components for the West Central region. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 38. West Central Region Single Family Residential Waste Composition – Detailed  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	1.1%	1.5%	0.7%	1.5%
2 High Grade Office Paper	1.8%	1.5%	1.3%	2.2%
3 Magazines/Catalogs	0.6%	1.0%	0.3%	0.9%
4 Uncoated OCC - Recyclable	3.5%	3.1%	2.7%	4.4%
5 Coated OCC	<0.1%	<0.1%	<0.1%	<0.1%
6 Boxboard	1.6%	0.9%	1.4%	1.9%
7 Cartons - Aseptic/Gable Top Containers	0.3%	0.3%	0.2%	0.4%
8 Mixed Paper - Recyclable	5.5%	3.6%	4.5%	6.5%
9 Compostable Paper	3.3%	2.2%	2.7%	3.9%
10 Other Paper	2.7%	1.6%	2.2%	3.1%
<b>Total Paper</b>	<b>20.4%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	2.2%	1.4%	1.8%	2.6%
12 Natural HDPE (#2) Bottles	0.4%	0.4%	0.3%	0.5%
13 Colored HDPE (#2) Bottles	0.5%	0.5%	0.4%	0.6%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.4%	0.4%	0.2%	0.5%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	0.3%	0.5%	0.1%	0.4%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	1.7%	0.9%	1.5%	2.0%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.3%	0.3%	0.2%	0.4%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.5%	0.5%	0.4%	0.7%
21 Rigid Non-Packaging	2.7%	1.8%	2.2%	3.2%
22 Bulky Rigid Plastics	0.9%	1.5%	0.5%	1.3%
23 PE Recyclable Film	0.9%	0.6%	0.7%	1.0%
24 Agricultural Firlm	0.3%	1.3%	<0.1%	0.6%
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	6.7%	3.2%	5.8%	7.6%
27 PS Foam (#6)	0.8%	0.5%	0.7%	0.9%
28 Compostable Plastics	<0.1%	0.1%	<0.1%	<0.1%
29 Other Plastics	0.8%	1.5%	0.4%	1.3%
<b>Total Plastic</b>	<b>19.4%</b>			
<b>METAL</b>				
30 Aluminum Beverage Containers	1.0%	0.6%	0.9%	1.2%
31 Other Aluminum	0.3%	0.4%	0.2%	0.4%
32 Ferrous ("Tin") Cans	0.7%	0.6%	0.6%	0.9%
33 Other Ferrous Scrap	2.7%	5.7%	1.1%	4.3%
34 Other Non-Ferrous Scrap	0.1%	0.5%	<0.1%	0.2%
35 Other Metal	2.5%	3.5%	1.6%	3.5%
<b>Total Metals</b>	<b>7.4%</b>			

Table 38. West Central Region Single Family Residential Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	0.7%	0.8%	0.4%	0.9%
37 Colored Containers - Beverage	0.3%	0.4%	0.2%	0.5%
38 Glass Food Containers	0.6%	0.7%	0.4%	0.7%
39 Other Glass	0.7%	1.1%	0.4%	1.0%
<b>Total Glass</b>	<b>2.3%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	1.0%	3.0%	0.1%	1.8%
41 Yard Materials - >6"	0.2%	0.6%	<0.1%	0.4%
42 Food Scraps (Not Traditionally Edible)	3.3%	2.8%	2.6%	4.1%
43 Wasted Food	12.2%	6.0%	10.5%	13.8%
44 Diapers	3.6%	2.8%	2.9%	4.4%
45 Animal Waste/Kitty Litter	1.4%	2.2%	0.7%	2.0%
46 Bottom Fines/Dirt	0.8%	2.5%	0.1%	1.5%
47 Other Organic Material	2.4%	2.4%	1.7%	3.1%
<b>Total Organics</b>	<b>24.9%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	1.2%	2.7%	0.4%	1.9%
49 Untreated Clean Dimensional Lumber	1.4%	3.2%	0.5%	2.3%
50 Unpainted Engineered Wood	0.3%	0.9%	<0.1%	0.6%
51 Painted/Stained Wood	1.5%	3.8%	0.5%	2.6%
52 Other Recyclable Wood	0.2%	1.0%	<0.1%	0.5%
53 Rock, Concrete, Brick	<0.1%	0.3%	<0.1%	0.1%
54 Gypsum Wallboard - Demo	<0.1%	<0.1%	<0.1%	<0.1%
55 Gypsum Wallboard - Clean Scrap	<0.1%	<0.1%	<0.1%	<0.1%
56 Roofing Shingles	<0.1%	<0.1%	<0.1%	<0.1%
57 PVC	<0.1%	0.2%	<0.1%	0.1%
58 Ceramics/Porcelain Fixtures	0.1%	0.5%	<0.1%	0.3%
59 Other CDD	1.2%	2.1%	0.6%	1.8%
<b>Total Construction &amp; Demolition</b>	<b>6.1%</b>			

Table 38. West Central Region Single Family Residential Waste Composition –  
Detailed (continued)  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	0.2%	0.5%	<0.1%	0.3%
63 Non-Banned Electronic Equipment	0.4%	0.8%	0.2%	0.6%
64 Small Electrical Appliances	0.8%	1.8%	0.3%	1.3%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	0.1%	0.2%	<0.1%	0.2%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	0.5%	2.6%	<0.1%	1.2%
72 Paint	<0.1%	0.1%	<0.1%	<0.1%
73 Automotive Used Oil/Filters	<0.1%	0.2%	<0.1%	<0.1%
74 Household Hazardous Waste	<0.1%	<0.1%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	<0.1%	<0.1%	<0.1%	<0.1%
76 Other Problem Materials	<0.1%	0.2%	<0.1%	0.1%
<b>Total Problem Materials</b>	<b>2.2%</b>			
<b>OTHER WASTE</b>				
77 Textiles	8.2%	7.7%	6.1%	10.4%
78 Carpet	0.3%	1.6%	<0.1%	0.8%
79 Carpet Padding	<0.1%	<0.1%	<0.1%	<0.1%
80 Wood Pallets	0.4%	2.5%	<0.1%	1.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	0.1%	<0.1%	<0.1%
83 Wood Furniture	1.5%	5.7%	<0.1%	3.1%
84 Aerosol Cans	0.2%	0.2%	0.1%	0.3%
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>10.8%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	0.6%	0.7%	0.4%	0.8%
Other Plastic	0.5%	1.0%	0.2%	0.8%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	2.7%	3.4%	1.7%	3.6%
Food Scraps	1.4%	1.4%	1.0%	1.8%
Wasted Food	0.7%	0.9%	0.5%	0.9%
Other Organics	0.7%	1.2%	0.3%	1.0%
<b>TOTALS</b>	<b>6.5%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 35 samples

## Multi-Family

Exhibit 31 provides a summary of the nine material categories that comprise the Category 1 MSW disposed by the multi-family generating sector in the West Central region. Data is provided for each category as a percentage of the total. As indicated, construction and demolition debris comprises the largest portion of the waste stream at 32.8 percent, followed by organics at 20.1 percent, and paper at 14.4 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 31. West Central Region Multi-Family Waste Composition

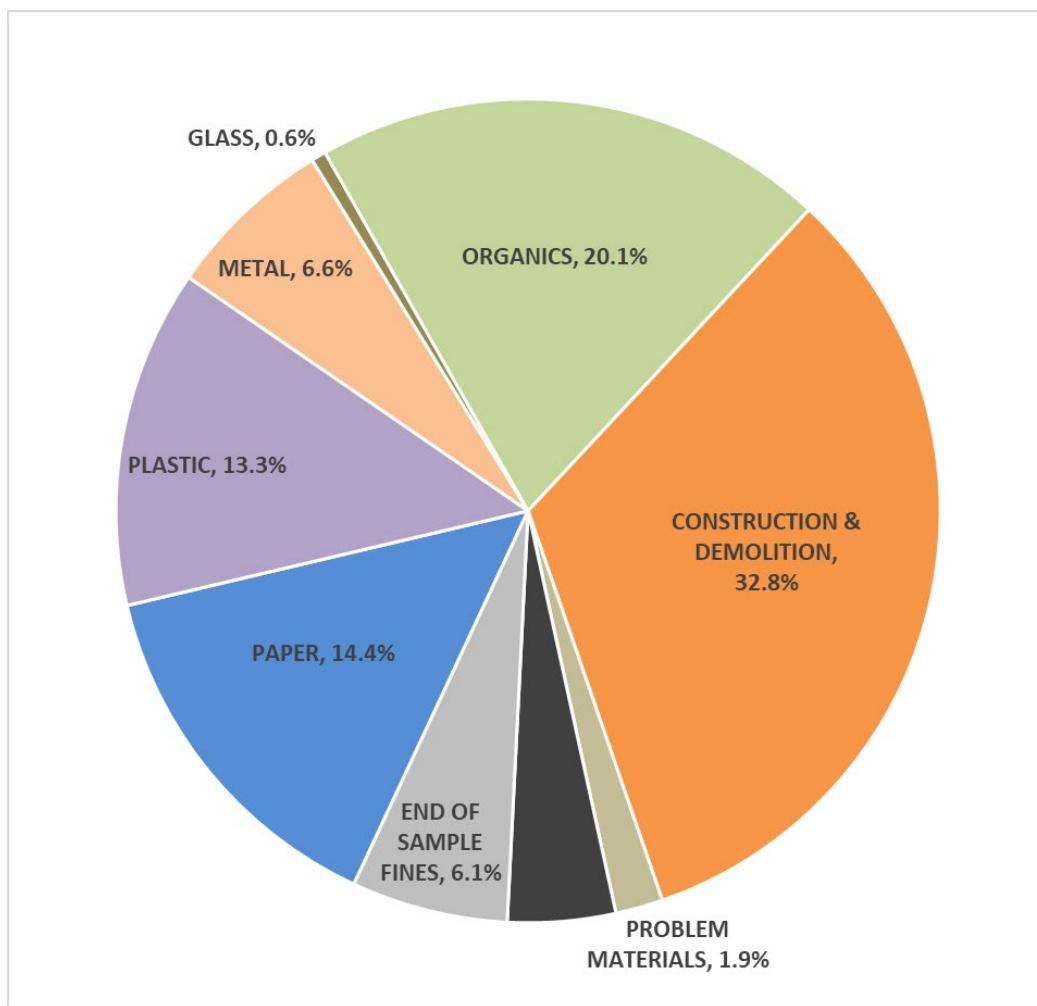


Table 39 provides a detailed profile of the multi-family MSW composition that includes the percent contribution of all material components for the West Central region. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 39. West Central Region Multi-Family Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	1.1%	0.2%	0.8%	1.3%
2 High Grade Office Paper	0.8%	0.7%	<0.1%	1.7%
3 Magazines/Catalogs	<0.1%	<0.1%	<0.1%	<0.1%
4 Uncoated OCC - Recyclable	0.9%	0.3%	0.6%	1.2%
5 Coated OCC	<0.1%	<0.1%	<0.1%	<0.1%
6 Boxboard	0.6%	0.1%	0.4%	0.7%
7 Cartons - Aseptic/Gable Top Containers	<0.1%	<0.1%	<0.1%	<0.1%
8 Mixed Paper - Recyclable	6.6%	0.2%	6.3%	6.8%
9 Compostable Paper	4.0%	0.3%	3.6%	4.4%
10 Other Paper	0.4%	0.4%	<0.1%	0.9%
<b>Total Paper</b>	<b>14.4%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	1.8%	<0.1%	1.8%	1.8%
12 Natural HDPE (#2) Bottles	0.1%	<0.1%	<0.1%	0.2%
13 Colored HDPE (#2) Bottles	0.4%	0.5%	<0.1%	1.0%
14 PP (#5) Bottles	0.9%	1.2%	<0.1%	2.3%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.3%	0.2%	<0.1%	0.6%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	<0.1%	<0.1%	<0.1%	<0.1%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	0.5%	0.2%	0.2%	0.7%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	<0.1%	0.1%	<0.1%	0.2%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.6%	<0.1%	0.6%	0.7%
21 Rigid Non-Packaging	0.9%	0.4%	0.4%	1.3%
22 Bulky Rigid Plastics	<0.1%	<0.1%	<0.1%	<0.1%
23 PE Recyclable Film	0.3%	0.2%	<0.1%	0.5%
24 Agricultural Film	<0.1%	<0.1%	<0.1%	<0.1%
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	4.7%	1.0%	3.5%	6.0%
27 PS Foam (#6)	0.8%	0.8%	<0.1%	1.8%
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	1.9%	1.6%	<0.1%	3.7%
<b>Total Plastic</b>	<b>13.3%</b>			
<b>METAL</b>				
30 Aluminum Beverage Containers	0.5%	0.5%	<0.1%	1.0%
31 Other Aluminum	0.5%	0.2%	0.3%	0.7%
32 Ferrous ("Tin") Cans	1.0%	0.6%	0.3%	1.7%
33 Other Ferrous Scrap	<0.1%	<0.1%	<0.1%	<0.1%
34 Other Non-Ferrous Scrap	<0.1%	<0.1%	<0.1%	<0.1%
35 Other Metal	4.7%	2.7%	1.6%	7.8%
<b>Total Metals</b>	<b>6.6%</b>			

Table 39. West Central Region Multi-Family Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	<0.1%	<0.1%	<0.1%	<0.1%
37 Colored Containers - Beverage	0.1%	0.2%	<0.1%	0.3%
38 Glass Food Containers	0.4%	0.5%	<0.1%	1.0%
39 Other Glass	<0.1%	0.1%	<0.1%	0.3%
<b>Total Glass</b>	<b>0.6%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	0.2%	0.2%	<0.1%	0.4%
41 Yard Materials - >6"	<0.1%	<0.1%	<0.1%	<0.1%
42 Food Scraps (Not Traditionally Edible)	0.5%	0.7%	<0.1%	1.4%
43 Wasted Food	15.4%	0.3%	15.1%	15.8%
44 Diapers	3.9%	0.8%	2.9%	4.8%
45 Animal Waste/Kitty Litter	<0.1%	<0.1%	<0.1%	<0.1%
46 Bottom Fines/Dirt	<0.1%	<0.1%	<0.1%	<0.1%
47 Other Organic Material	0.2%	0.2%	<0.1%	0.4%
<b>Total Organics</b>	<b>20.1%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	<0.1%	<0.1%	<0.1%	<0.1%
49 Untreated Clean Dimensional Lumber	2.5%	<0.1%	<0.1%	<0.1%
50 Unpainted Engineered Wood	2.5%	3.5%	<0.1%	6.6%
51 Painted/Stained Wood	1.0%	0.5%	0.4%	1.6%
52 Other Recyclable Wood	<0.1%	1.4%	<0.1%	1.6%
53 Rock, Concrete, Brick	<0.1%	<0.1%	<0.1%	<0.1%
54 Gypsum Wallboard - Demo	26.8%	<0.1%	<0.1%	<0.1%
55 Gypsum Wallboard - Clean Scrap	<0.1%	1.0%	<0.1%	1.1%
56 Roofing Shingles	<0.1%	<0.1%	<0.1%	<0.1%
57 PVC	<0.1%	<0.1%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	<0.1%	<0.1%	<0.1%	<0.1%
59 Other CDD	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Construction &amp; Demolition</b>	<b>32.8%</b>			

Table 39. West Central Region Multi-Family Waste Composition – Detailed  
 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

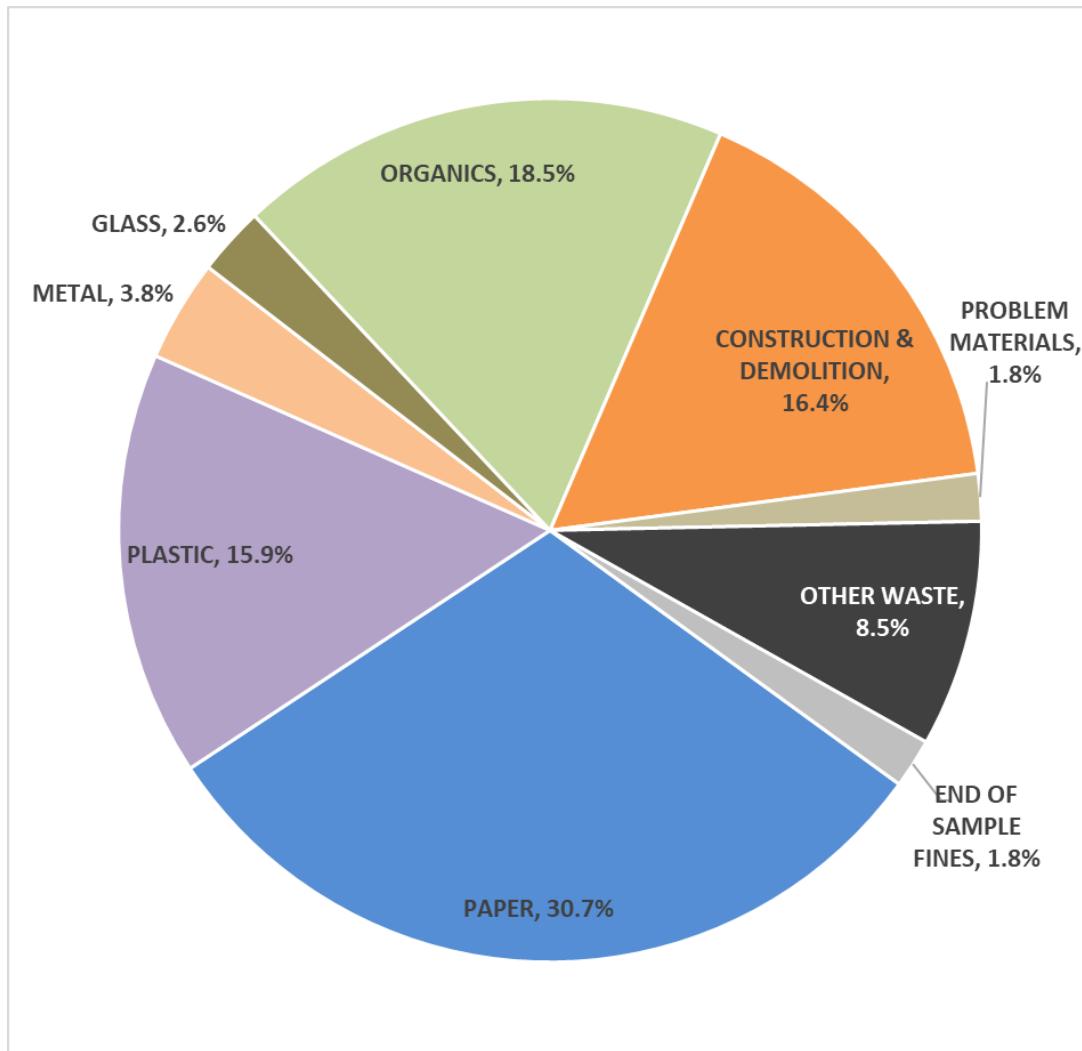
<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	<0.1%	0.1%	<0.1%	0.3%
63 Non-Banned Electronic Equipment	<0.1%	<0.1%	<0.1%	<0.1%
64 Small Electrical Appliances	1.7%	2.5%	<0.1%	4.6%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	<0.1%	<0.1%	<0.1%	<0.1%
73 Automotive Used Oil/Filters	<0.1%	<0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	<0.1%	<0.1%	<0.1%	<0.1%
75 Sharps, Needles, Lancets	<0.1%	<0.1%	<0.1%	<0.1%
76 Other Problem Materials	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Problem Materials</b>	<b>1.9%</b>			
<b>OTHER WASTE</b>				
77 Textiles	2.0%	1.6%	0.2%	3.9%
78 Carpet	2.0%	2.9%	<0.1%	5.4%
79 Carpet Padding	<0.1%	<0.1%	<0.1%	<0.1%
80 Wood Pallets	<0.1%	<0.1%	<0.1%	<0.1%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	<0.1%	<0.1%	<0.1%	<0.1%
84 Aerosol Cans	0.2%	0.2%	<0.1%	0.4%
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>4.2%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	0.6%	0.3%	0.3%	1.0%
Other Plastic	1.4%	0.3%	1.1%	1.8%
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	0.8%	<0.1%	0.8%	0.8%
Food Scraps	<0.1%	<0.1%	<0.1%	<0.1%
Wasted Food	<0.1%	<0.1%	<0.1%	<0.1%
Other Organics	3.3%	2.4%	0.5%	6.0%
<b>TOTALS</b>	<b>6.1%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 2 samples

## ICI

**Exhibit 32** provides a summary of the nine material categories that comprise the Category 1 MSW disposed by the ICI generating sector in the West Central region. Data is provided for each category as a percentage of the total. As indicated, paper comprises the largest portion of the waste stream at 30.7 percent, followed by organics at 18.5 percent, and construction and demolition debris at 16.4 percent. This data includes all types of material components that compose the broader categories regardless if the material is considered reusable, recyclable, compostable or non-marketable.

Exhibit 32. West Central Region ICI Waste Composition



**Table 40** provides a detailed profile of the ICI MSW composition that includes the percent contribution of all material components for the West Central region. For each material component, the mean percent, standard deviation, and 90 percent confidence intervals are included. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 40. West Central Region ICI Waste Composition – Detailed  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PAPER</b>				
1 Newsprint (ONP)	1.2%	6.7%	<0.1%	2.9%
2 High Grade Office Paper	2.0%	5.1%	0.8%	3.3%
3 Magazines/Catalogs	0.6%	2.6%	<0.1%	1.3%
4 Uncoated OCC - Recyclable	9.0%	18.9%	4.3%	13.7%
5 Coated OCC	0.3%	1.3%	<0.1%	0.6%
6 Boxboard	0.9%	1.5%	0.5%	1.3%
7 Cartons - Aseptic/Gable Top Containers	0.4%	1.0%	0.2%	0.7%
8 Mixed Paper - Recyclable	9.1%	19.7%	4.2%	14.0%
9 Compostable Paper	3.7%	6.8%	2.0%	5.4%
10 Other Paper	3.5%	9.6%	1.1%	5.9%
<b>Total Paper</b>	<b>30.7%</b>			
<b>PLASTIC</b>				
11 PET (#1) Bottles	0.7%	1.1%	0.4%	1.0%
12 Natural HDPE (#2) Bottles	0.2%	0.3%	<0.1%	0.2%
13 Colored HDPE (#2) Bottles	0.2%	0.4%	<0.1%	0.3%
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.1%	0.4%	<0.1%	0.2%
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	<0.1%	0.2%	<0.1%	<0.1%
18 PP(#5) Non-Bottle Rigid Containers & Packaging	1.0%	1.4%	0.7%	1.4%
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.2%	0.6%	0.1%	0.4%
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.2%	0.4%	0.1%	0.3%
21 Rigid Non-Packaging	2.2%	3.9%	1.2%	3.2%
22 Bulky Rigid Plastics	1.0%	2.2%	0.4%	1.5%
23 PE Recyclable Film	0.2%	0.3%	0.1%	0.3%
24 Agricultural Film	0.2%	1.2%	<0.1%	0.5%
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%
26 Other Flexible Films	7.8%	7.2%	6.0%	9.6%
27 PS Foam (#6)	0.4%	0.8%	0.2%	0.5%
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%
29 Other Plastics	1.5%	3.4%	0.6%	2.3%
<b>Total Plastic</b>	<b>15.9%</b>			
<b>METAL</b>				
30 Aluminum Beverage Containers	0.3%	0.5%	0.1%	0.4%
31 Other Aluminum	<0.1%	0.1%	<0.1%	<0.1%
32 Ferrous ("Tin") Cans	0.2%	0.3%	<0.1%	0.3%
33 Other Ferrous Scrap	2.3%	5.4%	0.9%	3.6%
34 Other Non-Ferrous Scrap	<0.1%	<0.1%	<0.1%	<0.1%
35 Other Metal	1.1%	3.1%	0.3%	1.8%
<b>Total Metals</b>	<b>3.8%</b>			

Table 40. West Central Region ICI Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>GLASS</b>				
36 Clear Containers - Beverage	0.3%	0.5%	0.2%	0.4%
37 Colored Containers - Beverage	0.2%	0.6%	<0.1%	0.4%
38 Glass Food Containers	<0.1%	0.1%	<0.1%	<0.1%
39 Other Glass	2.0%	6.8%	0.3%	3.7%
<b>Total Glass</b>	<b>2.6%</b>			
<b>ORGANICS</b>				
40 Yard Materials - <6"	<0.1%	0.2%	<0.1%	0.1%
41 Yard Materials - >6"	<0.1%	<0.1%	<0.1%	<0.1%
42 Food Scraps (Not Traditionally Edible)	2.6%	6.0%	1.2%	4.1%
43 Wasted Food	13.3%	19.6%	8.4%	18.1%
44 Diapers	0.8%	2.1%	0.3%	1.3%
45 Animal Waste/Kitty Litter	0.3%	1.1%	<0.1%	0.6%
46 Bottom Fines/Dirt	<0.1%	<0.1%	<0.1%	<0.1%
47 Other Organic Material	1.4%	2.6%	0.7%	2.0%
<b>Total Organics</b>	<b>18.5%</b>			
<b>CONSTRUCTION &amp; DEMOLITION</b>				
48 Treated Wood	1.0%	3.0%	0.3%	1.8%
49 Untreated Clean Dimensional Lumber	3.4%	8.6%	1.3%	5.6%
50 Unpainted Engineered Wood	2.6%	12.7%	<0.1%	5.8%
51 Painted/Stained Wood	4.4%	14.3%	0.8%	7.9%
52 Other Recyclable Wood	1.6%	10.9%	<0.1%	4.3%
53 Rock, Concrete, Brick	<0.1%	<0.1%	<0.1%	<0.1%
54 Gypsum Wallboard - Demo	1.1%	6.0%	<0.1%	2.6%
55 Gypsum Wallboard - Clean Scrap	1.4%	9.4%	<0.1%	3.7%
56 Roofing Shingles	<0.1%	<0.1%	<0.1%	<0.1%
57 PVC	<0.1%	0.2%	<0.1%	<0.1%
58 Ceramics/Porcelain Fixtures	<0.1%	<0.1%	<0.1%	<0.1%
59 Other CDD	0.8%	3.5%	<0.1%	1.6%
<b>Total Construction &amp; Demolition</b>	<b>16.4%</b>			

Table 40. West Central Region ICI Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>Mean Composition</b>	<b>Standard Deviation</b>	<b>90% Confidence Limits</b>	
			<b>Lower</b>	<b>Upper</b>
<b>PROBLEM MATERIALS</b>				
60 Televisions - CRT	<0.1%	<0.1%	<0.1%	<0.1%
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%
62 Other Banned Electronic Equipment	0.2%	1.2%	<0.1%	0.5%
63 Non-Banned Electronic Equipment	0.5%	1.7%	<0.1%	0.9%
64 Small Electrical Appliances	0.5%	2.4%	<0.1%	1.1%
65 White Goods - Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
66 White Goods - Non-Refridgerated	<0.1%	<0.1%	<0.1%	<0.1%
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%
68 Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%
72 Paint	<0.1%	0.3%	<0.1%	0.1%
73 Automotive Used Oil/Filters	<0.1%	<0.1%	<0.1%	<0.1%
74 Household Hazardous Waste	<0.1%	0.4%	<0.1%	0.2%
75 Sharps, Needles, Lancets	<0.1%	<0.1%	<0.1%	<0.1%
76 Other Problem Materials	0.3%	1.8%	<0.1%	0.8%
<b>Total Problem Materials</b>	<b>1.8%</b>			
<b>OTHER WASTE</b>				
77 Textiles	5.7%	9.9%	3.3%	8.2%
78 Carpet	0.9%	3.9%	<0.1%	1.9%
79 Carpet Padding	0.3%	1.1%	<0.1%	0.6%
80 Wood Pallets	1.1%	5.0%	<0.1%	2.4%
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%
83 Wood Furniture	0.3%	1.7%	<0.1%	0.8%
84 Aerosol Cans	<0.1%	0.2%	<0.1%	0.1%
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total Other Waste</b>	<b>8.5%</b>			
<b>END OF SAMPLE FINES</b>				
Other Paper	0.4%	1.1%	0.2%	0.7%
Other Plastic	0.2%	0.5%	<0.1%	0.3%
Other Glass	<0.1%	0.1%	<0.1%	<0.1%
Bottom Fines/Dirt	0.5%	0.8%	0.3%	0.7%
Food Scraps	0.4%	0.8%	0.2%	0.6%
Wasted Food	0.3%	0.7%	0.1%	0.5%
Other Organics	0.1%	0.3%	<0.1%	0.2%
<b>TOTALS</b>	<b>1.8%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

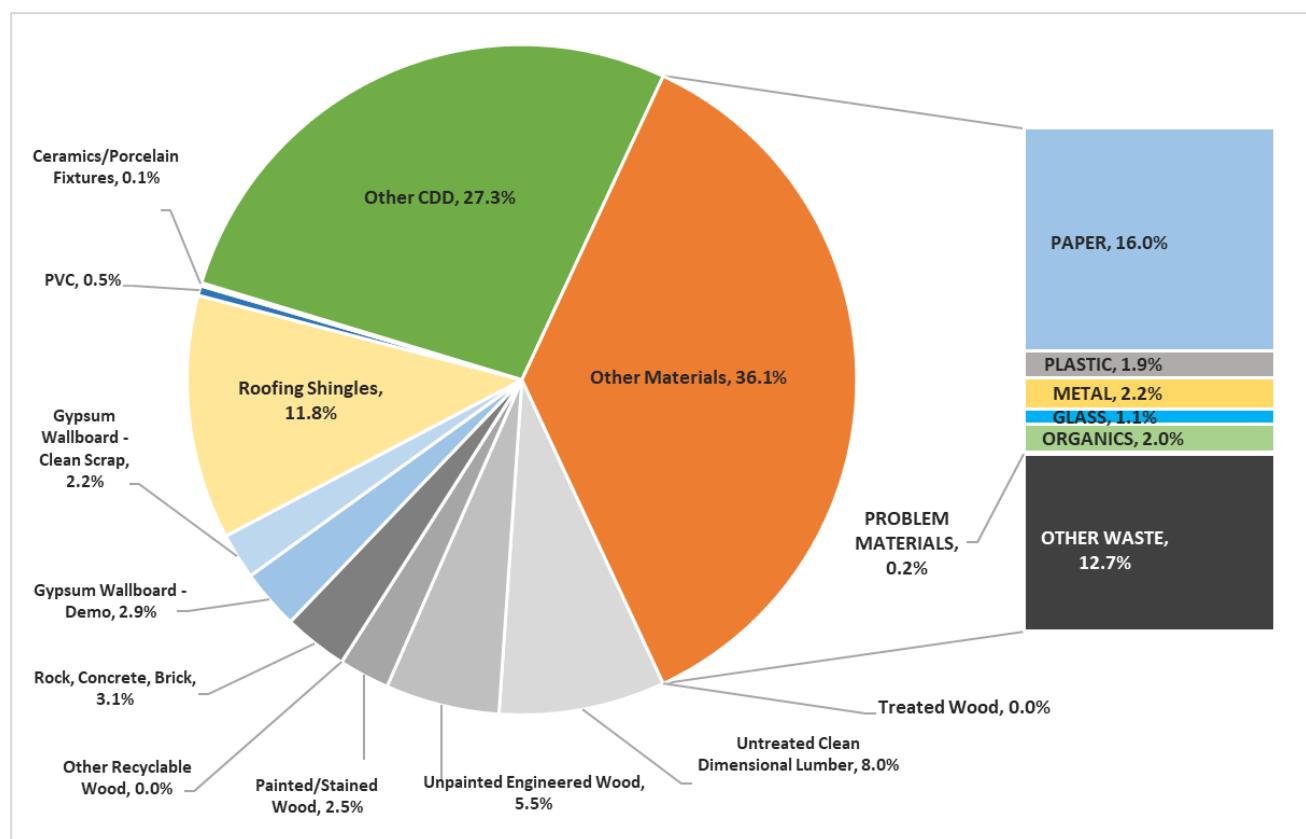
Note: Composition based on 44 samples

## Category 25 Construction and Demolition Debris (CDD)

**Exhibit 33** provides a summary of the nine material categories that comprise the Category 25 CDD disposed in the West Central region. Data is provided for each category as a percentage of the total. As expected, CDD comprises the largest portion of the CDD waste stream at 63.9 percent. Of the 63.9 percent of materials classified as CDD, the following materials comprise the largest portion:

- Other CDD – 27.3 percent
- Roofing Shingles – 11.8 percent
- Untreated Clean Dimensional Lumber – 8.0 percent
- Unpainted Engineered Wood – 5.5 percent.

Exhibit 33. West Central Region CDD Waste Composition



**Table 41** provides a detailed profile of the West Central region CDD composition that includes the percent contribution of all material components. For each material component, the mean percent is included. Standard statistical analysis of CDD materials is not provided due to the significant variation in the size and types of loads visually characterized as part of this portion of the Study. The sum of the individual material components for a particular category equal the percentage shown for that category.

Table 41. West Central Region CDD Waste Composition – Detailed  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>PAPER</b>		
Newsprint (ONP)	0	<0.1%
High Grade Office Paper	0	<0.1%
Magazines/Catalogs	0	<0.1%
Uncoated OCC - Recyclable	2,600	2.9%
Coated OCC	0	<0.1%
Boxboard	11,700	12.9%
Cartons - Aseptic/Gable Top Containers	0	<0.1%
Mixed Paper - Recyclable	200	0.2%
Compostable Paper	0	<0.1%
Other Paper	0	<0.1%
<b>Total Paper</b>	<b>14,500</b>	<b>16.0%</b>
<b>PLASTIC</b>		
PET (#1) Bottles	0	<0.1%
Natural HDPE (#2) Bottles	0	<0.1%
Colored HDPE (#2) Bottles	0	<0.1%
PP (#5) Bottles	0	<0.1%
Other (#3, #4, #6, and #7) Bottles	0	<0.1%
PET(#1) Non-Bottle Rigid Containers &	0	<0.1%
HDPE (#2) Non-Bottle Rigid Containers	0	<0.1%
PP(#5) Non-Bottle Rigid Containers &	0	<0.1%
PS(#6) Non-Foam, Bottle Rigid	0	<0.1%
Other (#7)/Unidentifiable Non-Bottle	0	<0.1%
Rigid Non-Packaging	0	<0.1%
Bulky Rigid Plastics	100	<0.1%
PE Recyclable Film	0	<0.1%
Agricultural Film	0	<0.1%
Pouches	0	<0.1%
Other Flexible Films	900	1.0%
PS Foam (#6)	100	<0.1%
Compostable Plastics	0	<0.1%
Other Plastics	700	0.7%
<b>Total Plastic</b>	<b>1,700</b>	<b>1.9%</b>

Table 41. West Central Region CDD Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>METAL</b>		
Aluminum Beverage Containers	0	<0.1%
Other Aluminum	200	0.2%
Ferrous ("Tin") Cans	0	<0.1%
Other Ferrous Scrap	1,800	2.0%
Other Non-Ferrous Scrap	0	<0.1%
Other Metal	0	<0.1%
<b>Total Metals</b>	<b>2,000</b>	<b>2.2%</b>
<b>GLASS</b>		
Clear Containers - Beverage	0	<0.1%
Colored Containers - Beverage	0	<0.1%
Glass Food Containers	0	<0.1%
Other Glass	1,000	1.1%
<b>Total Glass</b>	<b>1,000</b>	<b>1.1%</b>
<b>ORGANICS</b>		
Yard Materials - <6"	100	<0.1%
Yard Materials - >6"	300	0.4%
Food Scraps (Not Traditionally Edible)	0	<0.1%
Wasted Food	0	<0.1%
Diapers	0	<0.1%
Animal Waste/Kitty Litter	0	<0.1%
Bottom Fines/Dirt	800	0.9%
Other Organic Material	700	0.7%
<b>Total Organics</b>	<b>1,800</b>	<b>2.0%</b>

Table 41. West Central Region CDD Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>CONSTRUCTION &amp; DEMOLITION</b>		
Treated Wood	0	<0.1%
Untreated Clean Dimensional Lumber	7,300	8.0%
Unpainted Engineered Wood	5,000	5.5%
Painted/Stained Wood	2,200	2.5%
Other Recyclable Wood	0	<0.1%
Rock, Concrete, Brick	2,800	3.1%
Gypsum Wallboard - Demo	2,600	2.9%
Gypsum Wallboard - Clean Scrap	2,000	2.2%
Roofing Shingles	10,700	11.8%
PVC	400	0.5%
Ceramics/Porcelain Fixtures	100	0.1%
Other CDD	24,800	27.3%
<b>Total Construction &amp; Demolition</b>	<b>58,000</b>	<b>63.9%</b>
<b>PROBLEM MATERIALS</b>		
Televisions - CRT	0	<0.1%
Televisions - Non-CRT	0	<0.1%
Other Banned Electronic Equipment	0	<0.1%
Non-Banned Electronic Equipment	0	<0.1%
Small Electrical Appliances	0	<0.1%
White Goods - Refridgerated	0	<0.1%
White Goods - Non-Refridgerated	0	<0.1%
Lead Acid Batteries	0	<0.1%
Other Batteries	0	<0.1%
Fluorescent Light Tubes	0	<0.1%
Compact Fluorescent Light Bulbs	0	<0.1%
Tires	100	0.1%
Paint	0	<0.1%
Automotive Used Oil/Filters	0	<0.1%
Household Hazardous Waste	0	<0.1%
Sharps, Needles, Lancets	0	<0.1%
Other Problem Materials	0	<0.1%
	0	
<b>Total Problem Materials</b>	<b>200</b>	<b>0.2%</b>

Table 41. West Central Region CDD Waste Composition – Detailed (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Components</b>	<b>2020 Tons</b>	<b>Mean Composition</b>
<b>OTHER WASTE</b>		
Textiles	0	<0.1%
Carpet	200	0.2%
Carpet Padding	0	<0.1%
Wood Pallets	11,000	12.2%
Bulky Items	200	0.2%
Mattresses and Box Springs	0	<0.1%
Wood Furniture	0	<0.1%
Aerosol Cans	0	<0.1%
Compressed Gas Containers	0	<0.1%
<b>Total Other Waste</b>	<b>11,500</b>	<b>12.7%</b>
<b>TOTALS</b>	<b>90,700</b>	<b>100.0%</b>

Note: Composition based on 140 samples

## MATERIAL COUNTS AND OCCURRENCES

During field activities SCS field staff counted the occurrences of select problem materials and other waste that comprised each Category 1 MSW sample. The following tables summarize the material counts for the overall and regional waste streams. The data included in these tables indicate the number of waste samples that contained at least one of each specified material and the percent of samples for the region and overall statewide that contained a material that was counted. The following tables provide this data:

- **Table 42** - Select Problem Material-Other Waste Occurrences – Overall Statewide
- **Table 43** - Select Problem Material-Other Waste Occurrences – Northeast Region
- **Table 44** - Select Problem Material-Other Waste Occurrences – Northern Region
- **Table 45** - Select Problem Material-Other Waste Occurrences – South Central Region
- **Table 46** - Select Problem Material-Other Waste Occurrences – Southeast Region
- **Table 47** - Select Problem Material-Other Waste Occurrences – West Central Region

Table 42. Select Problem Material-Other Waste Occurrences – Overall Statewide  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Category</b>	<b>Material Component</b>	<b>Number of Samples with Material Occurrence</b>	<b>Percent of Total Samples</b>
<b>Problem Materials</b>	Televisions -CRT	2	0.5%
	Televisions - non-CRT	2	0.5%
	Other banned electronic equipment	62	15.6%
	Non-banned electronic equipment	128	32.2%
	Small electrical appliances	94	23.6%
	White goods - refrigerated	2	0.5%
	White goods - non-refrigerated	1	0.3%
	Lead-acid batteries	2	0.5%
	Other batteries	132	33.2%
	Fluorescent light tubes	7	1.8%
	Compact flurescent light bulbs	43	10.8%
	Tires	12	3.0%
	Paint	35	8.8%
	Automotive used oil/filters	22	5.5%
	Household hazardous waste	12	3.0%
<b>Other Waste</b>	Sharps, needles, lancets	83	20.9%
	Other problem materials	95	23.9%
	Mattresses and box springs	1	0.3%
	Aerosol cans	237	59.5%
	Compressed gas containers	9	2.3%

Table 43. Select Problem Material-Other Waste Occurrences – Northeast Region  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Category</b>	<b>Material Component</b>	<b>Number of Samples with Material Occurrence</b>	<b>Percent of Total Samples</b>
<b>Problem Materials</b>	Televisions -CRT	0	0.0%
	Televisions - non-CRT	0	0.0%
	Other banned electronic equipment	17	24.6%
	Non-banned electronic equipment	9	13.0%
	Small electrical appliances	24	34.8%
	White goods - refrigerated	0	0.0%
	White goods - non-refrigerated	0	0.0%
	Lead-acid batteries	2	2.9%
	Other batteries	32	46.4%
	Fluorescent light tubes	0	0.0%
	Compact fluorescent light bulbs	9	13.0%
	Tires	2	2.9%
	Paint	8	11.6%
	Automotive used oil/filters	6	8.7%
	Household hazardous waste	2	2.9%
<b>Other Waste</b>	Sharps, needles, lancets	15	21.7%
	Other problem materials	12	17.4%
	Mattress and box springs	0	0.0%
	Aerosol cans	42	60.9%
	Compressed gas containers	3	4.3%

Table 44. Select Problem Material-Other Waste Occurrences – Northern Region  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Category</b>	<b>Material Component</b>	<b>Number of Samples with Material Occurrence</b>	<b>Percent of Total Samples</b>
<b>Problem Materials</b>	Televisions -CRT	0	0.0%
	Televisions - non-CRT	0	0.0%
	Other banned electronic equipment	6	12.5%
	Non-banned electronic equipment	11	22.9%
	Small electrical appliances	12	25.0%
	White goods - refrigerated	0	0.0%
	White goods - non-refrigerated	1	2.1%
	Lead-acid batteries	0	0.0%
	Other batteries	17	35.4%
	Fluorescent light tubes	1	2.1%
	Compact fluorescent light bulbs	10	20.8%
	Tires	0	0.0%
	Paint	3	6.3%
	Automotive used oil/filters	9	18.8%
	Household hazardous waste	0	0.0%
<b>Other Waste</b>	Sharps, needles, lancets	14	29.2%
	Other problem materials	5	10.4%
	Mattress and box springs	0	0.0%
	Aerosol cans	36	75.0%
	Compressed gas containers	2	4.2%

Table 45. Select Problem Material-Other Waste Occurrences – South Central Region  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Category</b>	<b>Material Component</b>	<b>Number of Samples with Material Occurrence</b>	<b>Percent of Total Samples</b>
<b>Problem Materials</b>	Televisions -CRT	1	1.1%
	Televisions - non-CRT	1	1.1%
	Other banned electronic equipment	11	12.4%
	Non-banned electronic equipment	28	31.5%
	Small electrical appliances	21	23.6%
	White goods - refrigerated	2	2.2%
	White goods - non-refrigerated	0	0.0%
	Lead-acid batteries	0	0.0%
	Other batteries	37	41.6%
	Fluorescent light tubes	2	2.2%
	Compact flurescent light bulbs	0	0.0%
	Tires	2	2.2%
	Paint	4	4.5%
	Automotive used oil/filters	1	1.1%
	Household hazardous waste	3	3.4%
	Sharps, needles, lancets	26	29.2%
	Other problem materials	29	32.6%
<b>Other Waste</b>	Mattress and box springs	0	0.0%
	Aerosol cans	47	52.8%
	Compressed gas containers	0	0.0%

Table 46. Select Problem Material-Other Waste Occurrences – Southeast Region  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

<b>Material Category</b>	<b>Material Component</b>	<b>Number of Samples with Material Occurrence</b>	<b>Percent of Total Samples</b>
<b>Problem Materials</b>	Televisions -CRT	1	0.9%
	Televisions - non-CRT	1	0.9%
	Other banned electronic equipment	14	12.8%
	Non-banned electronic equipment	49	45.0%
	Small electrical appliances	20	18.3%
	White goods - refrigerated	0	0.0%
	White goods - non-refrigerated	0	0.0%
	Lead-acid batteries	0	0.0%
	Other batteries	38	34.9%
	Fluorescent light tubes	4	3.7%
	Compact fluorescent light bulbs	20	18.3%
	Tires	4	3.7%
	Paint	15	13.8%
	Automotive used oil/filters	2	1.8%
	Household hazardous waste	4	3.7%
<b>Other Waste</b>	Sharps, needles, lancets	18	16.5%
	Other problem materials	36	33.0%
	Mattress and box springs	0	0.0%
	Aerosol cans	71	65.1%
	Compressed gas containers	3	2.8%

Table 47. Select Problem Material-Other Waste Occurrences – West Central Region  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

Material Category	Material Component	Number of Samples with Material Occurrence	Percent of Total Samples
Problem Materials	Televisions -CRT	0	0.0%
	Televisions - non-CRT	0	0.0%
	Other banned electronic equipment	14	16.1%
	Non-banned electronic equipment	31	35.6%
	Small electrical appliances	17	19.5%
	White goods - refrigerated	0	0.0%
	White goods - non-refrigerated	0	0.0%
	Lead-acid batteries	0	0.0%
	Other batteries	8	9.2%
	Fluorescent light tubes	0	0.0%
	Compact fluorescent light bulbs	4	4.6%
	Tires	4	4.6%
	Paint	5	5.7%
	Automotive used oil/filters	4	4.6%
	Household hazardous waste	3	3.4%
Other Waste	Sharps, needles, lancets	10	11.5%
	Other problem materials	13	14.9%
	Mattress and box springs	1	1.1%
	Aerosol cans	41	47.1%
	Compressed gas containers	1	1.1%

## TOP MATERIAL COMPONENTS

This section provides a summary of the top 10 material components for the following:

- **Table 48** – Category 1 MSW material components overall waste stream
- **Table 49** – Category 25 CDD material components overall waste stream
- **Table 50** – Category 1 MSW material components by generating sector
- **Table 51** – Category 1 MSW material components by region.

Table 48. Top 10 Category 1 MSW Overall Waste Components  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

2020-2021 Study Results	
Material Component	Percent Composition
Wasted Food (typically edible or spoiled food that was wasted because of spoilage or discarded before being eaten; not a result of food preparation or scraps)	14.5%
Other Flexible Films (non-PE film and non-film flexibles)	7.2%
Food Scraps (not traditionally edible)	6.0%
Textiles (clothing, bedding, curtains, blankets, stuffed animals, cotton diapers, other cloth material and leather goods)	5.5%
Compostable Paper (plastic lined paper products meeting ASTM D-6868, food contaminated paper (including OCC) and low-grade paper that does not fit into the Mixed Paper-Recyclable category)	5.3%
Mixed Paper - Recyclable (paper that would be included in residential "mixed mail" or commercial "office pack" recycling programs, not including newsprint, high grade office paper, magazines/catalogs, uncoated and coated OCC, boxboard or cartons)	5.1%
Bottom Fines/Dirt (small fragments, typically less than 2 inches, and miscellaneous fines and dirt)	3.6%
Diapers (infant and adult disposable diapers)	3.5%
Other Paper (all paper that doesn't fit in the other paper categories and items that are primarily paper but include other materials such as plastic or metal)	3.5%
Uncoated OCC - Recyclable (uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating)	3.2%
<b>TOTAL</b>	<b>57.5%</b>

Table 49. Top 10 Category 25 CDD Overall Waste Components  
(refer to Appendices B and E for descriptions of waste types and acronyms)

2020-2021 Study Results	
Material Component	Percent Composition
Other C&D (any other material used in home construction, not including wood, rock, brick , concrete, gypsum wallboard, shingles, PVC or ceramics/porcelain fixtures)	25.0%
Untreated Clean Dimensional Lumber (unpainted, untreated new or demolition dimensional lumber such as 2x4s, 2x6s, etc.; may contain nails or other trace contaminants)	11.5%
Roofing Shingles (asphalt shingles tarpaper; also tarpaper from built-up roofing)	10.0%
Untreated Clean Dimensional Lumber (unpainted, untreated new or demolition dimensional lumber such as 2x4s, 2x6s, etc.; may contain nails or other trace contaminants)	8.7%
Gypsum Wallboard - Demo (used gypsum drywall typically with paint, wallpaper or other finish coating)	6.5%
Wood Pallets (wood pallets and crating materials commonly used for industrial and commercial packaging and shipping)	5.3%
Boxboard (chipboard boxes not coated with wax, plastic or metal)	4.9%
Rock, Concrete, Brick (rock gravel, Portland cement mixtures (set or unset), fire-clay bricks, asphalt pavement)	4.3%
Painted/Stained Wood (wood that has had an external coating applied, such as paint or varnish in more than small amounts)	3.5%
Uncoated OCC - Recyclable (uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating)	3.4%
<b>TOTAL</b>	<b>83.1%</b>

Table 50. Top 10 Category 1 MSW Material Components by Generating Sector  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

Single Family Residential		Multi-Family		ICI	
Material	% Composition	Material	% Composition	Material	% Composition
Wasted Food (typically edible or spoiled food that was wasted because of spoilage or discarded before being eaten; not a result of food preparation or scraps)	14.8%	Wasted Food (typically edible or spoiled food that was wasted because of spoilage or discarded before being eaten; not a result of food preparation or scraps)	13.5%	Wasted Food (typically edible or spoiled food that was wasted because of spoilage or discarded before being eaten; not a result of food preparation or scraps)	14.6%
Food Scraps (not traditionally edible)	7.1%	Mixed Paper - Recyclable (paper that would be included in residential "mixed mail" or commercial "office pack" recycling programs, not including newsprint, high grade office paper, magazines/catalogs, uncoated and coated OCC, boxboard or cartons)	6.5%	Other Flexible Films (non-PE film and non-film flexibles)	8.3%
Other Flexible Films (non-PE film and non-film flexibles)	6.4%	Food Scraps (not traditionally edible)	5.9%	Mixed Paper - Recyclable (paper that would be included in residential "mixed mail" or commercial "office pack" recycling programs, not including newsprint, high grade office paper, magazines/catalogs, uncoated and coated OCC, boxboard or cartons)	6.6%
Textiles (clothing, bedding, curtains, blankets, stuffed animals, cotton diapers, other cloth material and leather goods)	6.3%	Gypsum Wallboard - Demo (used gypsum drywall typically with paint, wallpaper or other finish coating)	5.6%	Compostable Paper (plastic lined paper products meeting ASTM D-6868, food contaminated paper (including OCC) and low-grade paper that does not fit into the Mixed Paper-Recyclable category)	5.1%
Compostable Paper (plastic lined paper products meeting ASTM D-6868, food contaminated paper (including OCC) and low-grade paper that does not fit into the Mixed Paper-Recyclable category)	5.6%	Other Flexible Films (non-PE film and non-film flexibles)	5.0%	Uncoated OCC - Recyclable (uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating)	4.9%

Table 50. Top 10 Category 1 MSW Material Components by Generating Sector (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

Single Family Residential		Multi-Family		ICI	
Material	% Composition	Material	% Composition	Material	% Composition
Mixed Paper - Recyclable (paper that would be included in residential "mixed mail" or commercial "office pack" recycling programs, not including newsprint, high grade office paper, magazines/catalogs, uncoated and coated OCC, boxboard or cartons)	5.2%	Compostable Paper (plastic lined paper products meeting ASTM D-6868, food contaminated paper (including OCC) and low-grade paper that does not fit into the Mixed Paper-Recyclable category)	4.6%	Food Scraps (not traditionally edible)	4.8%
Diapers (infant and adult disposable diapers)	4.2%	Animal Waste/Kitty Litter (self defined)	4.3%	Textiles (clothing, bedding, curtains, blankets, stuffed animals, cotton diapers, other cloth material and leather goods)	4.5%
Animal Waste/Kitty Litter (self defined)	2.9%	Diapers (infant and adult disposable diapers)	4.1%	Other Paper (all paper that doesn't fit in the other paper categories and items that are primarily paper but include other materials such as plastic or metal)	2.9%
Other Paper (all paper that doesn't fit in the other paper categories and items that are primarily paper but include other materials such as plastic or metal)	2.7%	Textiles (clothing, bedding, curtains, blankets, stuffed animals, cotton diapers, other cloth material and leather goods)	3.7%	Diapers (infant and adult disposable diapers)	2.5%
Yard Materials - <6" (leaves, grass clippings, yard and garden debris and brush, including clean woody vegetative material no greater than 6 inches in diameter)	2.7%	Uncoated OCC - Recyclable (uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating)	3.0%	Untreated Clean Dimensional Lumber (unpainted, untreated new or demolition lumber such as 2x4s, 2x5s, etc.; may contain nails or other trace contaminants)	2.3%
<b>Total</b>	<b>57.9%</b>	<b>Total</b>	<b>56.22%</b>	<b>Total</b>	<b>56.45%</b>

Table 51. Top 10 Material Components by Region  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

Northeast		Northern		South Central		Southeast		West Central	
Material Component	Percent Composition	Material	Percent Composition						
Wasted Food	13.7%	Wasted Food	16.3%	Wasted Food	13.4%	Wasted Food	16.0%	Wasted Food	13.4%
Other Flexible Films	8.4%	Textiles	6.7%	Other Flexible Films	7.2%	Food Scraps (Not Traditionally Edible)	7.0%	Mixed Paper - Recyclable	7.4%
Food Scraps (Not Traditionally Edible)	6.8%	Other Flexible Films	6.4%	Compostable Paper	6.7%	Other Flexible Films	6.5%	Other Flexible Films	7.3%
Compostable Paper	6.5%	Food Scraps (Not Traditionally Edible)	5.9%	Food Scraps (Not Traditionally Edible)	6.4%	Mixed Paper - Recyclable	5.2%	Textiles	6.6%
Textiles	5.8%	Mixed Paper - Recyclable	4.8%	Bottom Fines/Dirt	5.2%	Compostable Paper	5.2%	Uncoated OCC - Recyclable	6.3%
Mixed Paper - Recyclable	4.2%	Compostable Paper	4.7%	Textiles	4.8%	Textiles	4.6%	Food Scraps (Not Traditionally Edible)	3.7%
Diapers	4.2%	Other Organic Material	4.5%	Other Organic Material	4.8%	Bottom Fines/Dirt	4.3%	Other Paper	3.5%
Other Organic Material	4.0%	Bottom Fines/Dirt	4.5%	Diapers	4.2%	Other Organic Material	4.1%	Compostable Paper	3.5%
Other Paper	3.8%	Diapers	4.1%	Other Paper	3.9%	Animal Waste/Kitty Litter	3.8%	Painted/Stained Wood	3.0%
Yard Materials - <6"	2.4%	Other Paper	3.9%	Mixed Paper - Recyclable	3.9%	Diapers	3.5%	Untreated Clean Dimensional Lumber	2.5%
<b>TOTAL</b>	<b>59.7%</b>	<b>TOTAL</b>	<b>61.7%</b>	<b>TOTAL</b>	<b>60.5%</b>	<b>TOTAL</b>	<b>60.2%</b>	<b>TOTAL</b>	<b>57.3%</b>

## **DATA COMPARISON TO 2009 STUDY**

This section includes tables and exhibits comparing overall statewide composition data collected for the 2020-2021 Study to the results from 2009 as follows:

- **Table 52** – Comparison of the Top Ten Category 1 MSW Material Components
- **Table 53** – Comparison of the Top Ten Category 25 CDD Material Components
- **Exhibit 34** – Comparison of Material Category Composition from 2020-2021 and 2009
- **Exhibit 35** – Comparison of Material Category Tonnage Disposed from 2020-2021 to 2009
- **Exhibit 36** – Comparison of Single Family Residential Material Category Composition from 2020-2021 to 2009
- **Exhibit 37** – Comparison of Multi-Family Residential Material Category Composition from 2020-2021 to 2009
- **Exhibit 38** – Comparison of ICI Material Category Composition from 2020-2021 to 2009

Table 52. Comparison of Top 10 Category 1 MSW Material Components from 2009 to 2020-2021  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

2020-2021 Study Results		2009 Study Results <sup>1</sup>	
Material Component	Percent Composition	Material Component	Percent Composition
Wasted Food (typically edible or spoiled food that was wasted because of spoilage or discarded before being eaten; not a result of food preparation or scraps)	14.5%	Food Scraps <sup>2</sup> (typically edible or spoiled food that was wasted because of spoilage or discarded before being eaten, including food waste resulting of food preparation and food scraps)	10.6%
Other Flexible Films (non-PE film and non-film flexibles)	7.2%	Roofing Shingles (asphalt shingles tarpaper; also tarpaper from built-up roofing)	5.8%
Food Scraps (not traditionally edible)	6.0%	Compostable Paper (tissues and paper including OCC that are soiled with food, such as paper plates, paper cups, pizza boxes, popcorn bags and paper towels)	5.0%
Textiles (clothing, bedding, curtains, blankets, stuffed animals, cotton diapers, other cloth material and leather goods)	5.5%	Painted/Stained Wood (wood that has had an external coating applied, such as paint or varnish)	4.4%
Compostable Paper (plastic lined paper products meeting ASTM D-6868, food contaminated paper (including OCC) and low-grade paper that does not fit into the Mixed Paper-Recyclable category)	5.3%	Other Plastic Film (flexible plastic film regardless of resin type, not including plastic film shopping bags or plastic film industrial packaging)	4.3%
Mixed Paper - Recyclable (paper that would be included in residential "mixed mail" or commercial "office pack" recycling programs, not including newsprint, high grade office paper, magazines/catalogs, uncoated and coated OCC, boxboard or cartons)	5.1%	Uncoated OCC - Recyclable (uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating)	3.9%
Bottom Fines/Dirt (small fragments, typically less than 2 inches, and miscellaneous fines and dirt)	3.6%	Yard Materials - <6" (leaves, grass clippings, yard and garden debris and brush, including clean woody vegetative material no greater than 6 inches in diameter)	3.8%
Diapers (infant and adult disposable diapers)	3.5%	Composite/Other Plastic (all items that were plastic but combined with metal, wood or glass)	3.6%
Other Paper (all paper that doesn't fit in the other paper categories and items that are primarily paper but include other materials such as plastic or metal)	3.5%	Bottom Fines/Dirt (small fragments that pass through the 1/4" sort screen, and miscellaneous fines and dirt)	3.6%
Uncoated OCC - Recyclable (uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating)	3.2%	Other Paper (all paper that doesn't fit in the other paper categories and items that are primarily paper but include other materials such as plastic or metal)	3.5%
<b>TOTAL</b>	<b>57.5%</b>	<b>TOTAL</b>	<b>48.5%</b>

<sup>1</sup> 2009 Wisconsin Statewide Waste Characterization Study, Table 3-1, Page 3-2, June 30, 2010

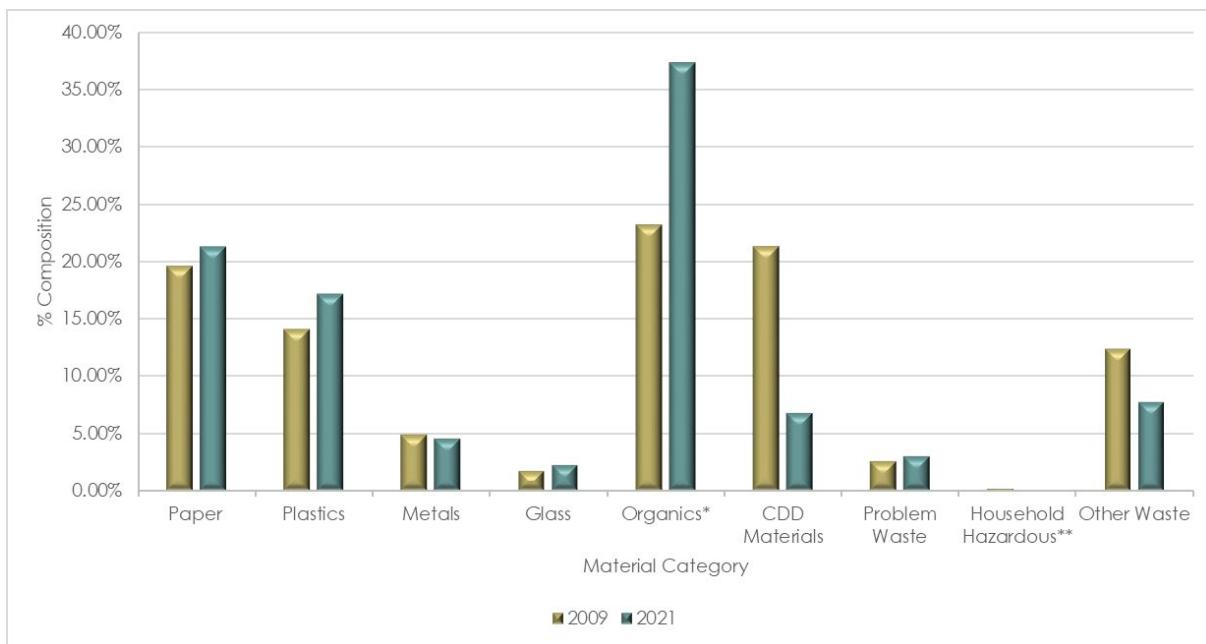
<sup>2</sup> Food scraps included both wasted food and food scraps.

Table 53. Comparison of the Top 10 Category 25 CDD Material Components from 2009 to 2020-2021  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

2020-2021 Study Results		2009 Study Results <sup>1</sup>	
Material Component	Percent Composition	Material Component	Percent Composition
Other C&D (any other material used in home construction, not including wood, rock, brick, concrete, gypsum wallboard, shingles, PVC or ceramics/porcelain fixtures)	25.0%	Roofing Shingles (asphalt shingles tarpaper; also tarpaper from built-up roofing)	29.5%
Untreated Clean Dimensional Lumber (unpainted, untreated new or demolition dimensional lumber such as 2x4s, 2x6s, etc.; may contain nails or other trace contaminants)	11.5%	Rock, Concrete, Bricks (rock gravel, Portland cement mixtures (set or unset), fire-clay bricks, asphalt pavement)	13.2%
Roofing Shingles (asphalt shingles tarpaper; also tarpaper from built-up roofing)	10.0%	Painted/Stained Wood (wood that has had an external coating applied, such as paint or varnish in more than small amounts)	10.1%
Untreated Clean Dimensional Lumber (unpainted, untreated new or demolition dimensional lumber such as 2x4s, 2x6s, etc.; may contain nails or other trace contaminants)	8.7%	Clean Dimensional Lumber (unpainted, untreated new or demolition dimensional lumber such as 2x4s, 2x6s, etc.; may contain nails or other trace contaminants)	8.8%
Gypsum Wallboard - Demo (used gypsum drywall typically with paint, wallpaper or other finish coating)	6.5%	Other C & D (any other material used in home construction, not including wood, rock, brick, concrete, gypsum wallboard, shingles, PVC or ceramics/porcelain fixtures)	5.8%
Wood Pallets (wood pallets and crating materials commonly used for industrial and commercial packaging and shipping)	5.3%	Other Ferrous Scrap (ferrous and alloyed ferrous metal scrap to which a magnet is attached, includes household, commercial and industrial materials)	4.8%
Boxboard (chipboard boxes not coated with wax, plastic or metal)	4.9%	Clean Engineered Wood (unpainted new or demolition scrap from sheet goods such as plywood, particle board, wafer board, oriented strand board and other residual materials used for sheathing and related construction uses; may contain nails or other trace contaminants)	4.7%
Rock, Concrete, Brick (rock gravel, Portland cement mixtures (set or unset), fire-clay bricks, asphalt pavement)	4.3%	Drywall - Clean Scraps (unpainted gypsum drywall construction cutoffs and scrap)	3.5%
Painted/Stained Wood (wood that has had an external coating applied, such as paint or varnish in more than small amounts)	3.5%	Bottom Fines/Dirt (small fragments that pass through the 1/4" sort screen, and miscellaneous fines and dirt)	3.0%
Uncoated OCC - Recyclable (uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating)	3.4%	Treated Wood (lumber that is either green or brown treated)	1.9%
<b>TOTAL</b>	<b>83.1%</b>	<b>TOTAL</b>	<b>85.3%</b>

<sup>1</sup> 2009 Wisconsin Statewide Waste Characterization Study, Table 3-12, Page 3-21, June 30, 2010

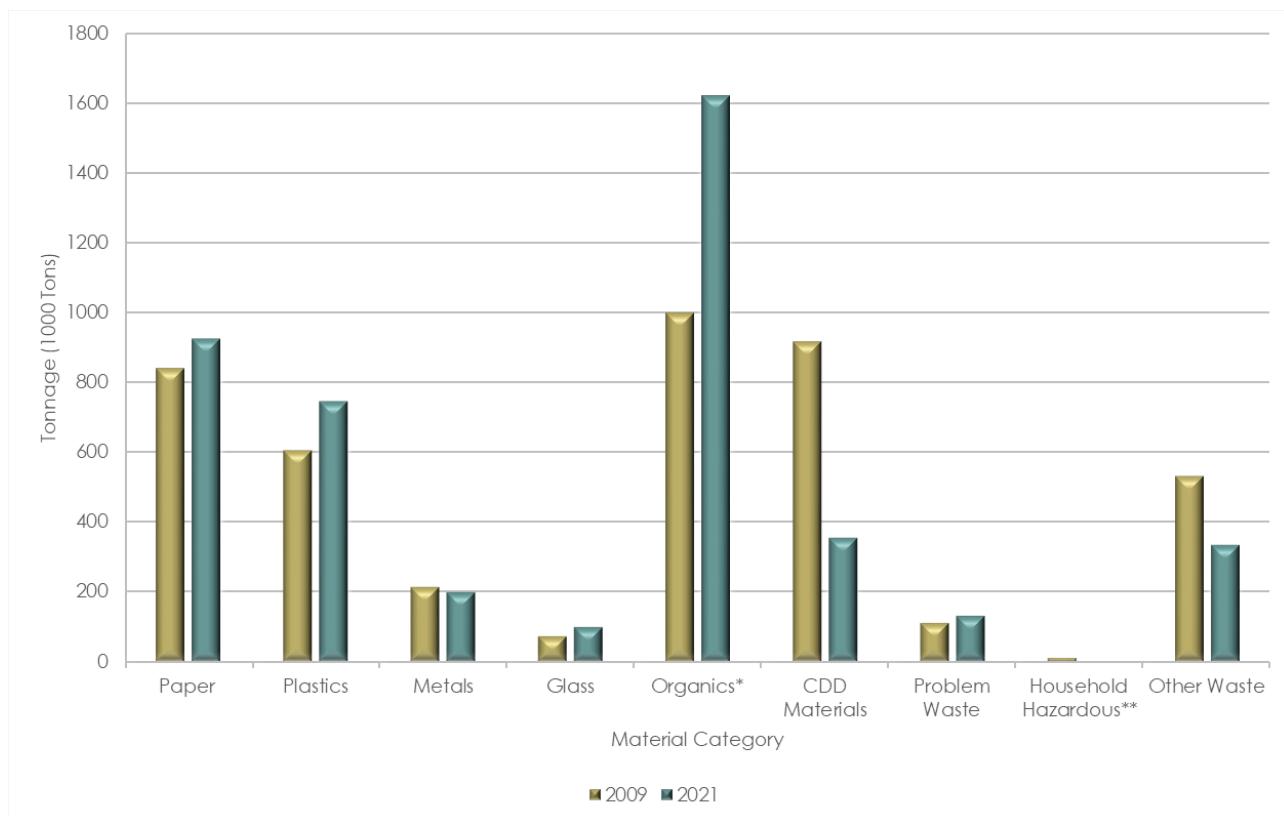
Exhibit 34. Comparison of Material Category Composition 2009 vs. 2020-2021



\*End of Sample Fines were incorporated into Organics for comparison purposes.

\*\*Household Hazardous Waste is included in Problem Waste for 2021 data.

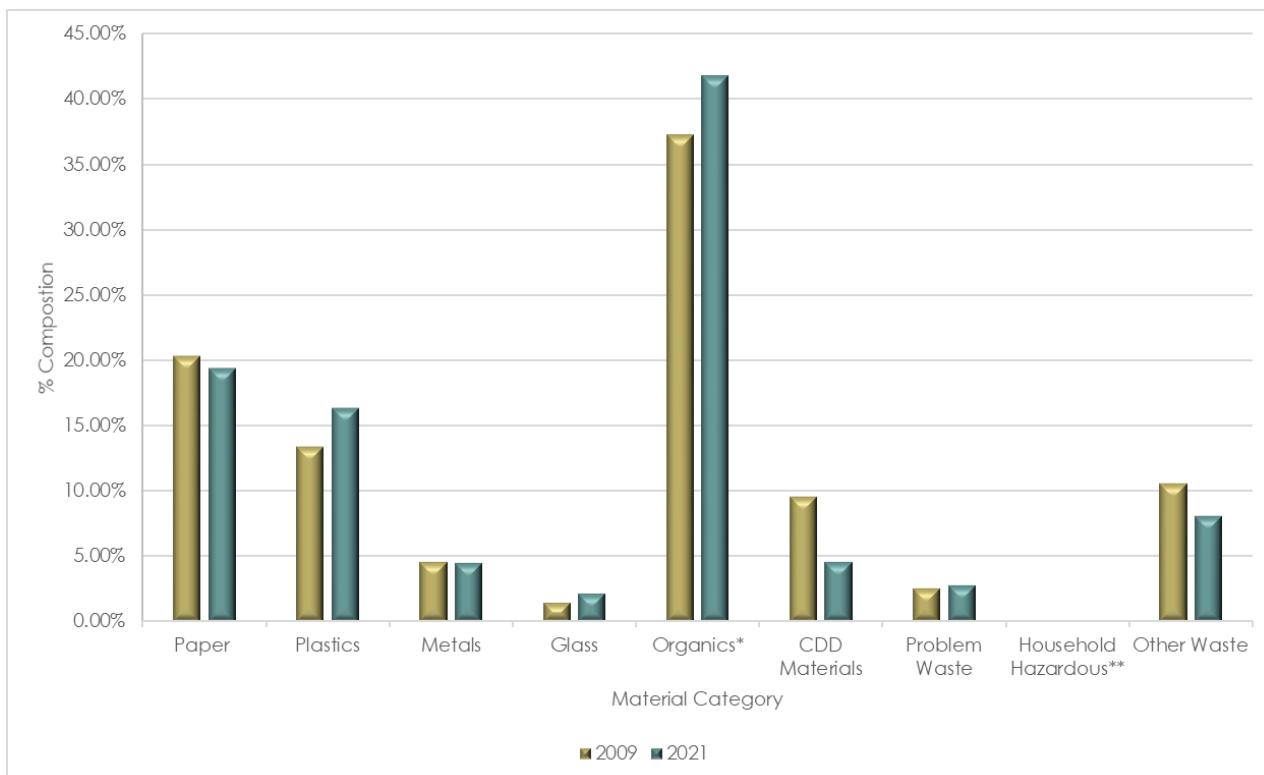
Exhibit 35. Comparison of Material Category Tonnage Disposed 2009 vs. 2020-2021



\*End of Sample Fines were incorporated into Organics for comparison purposes.

\*\*Household Hazardous Waste is included in Problem Waste for 2020-2021 data.

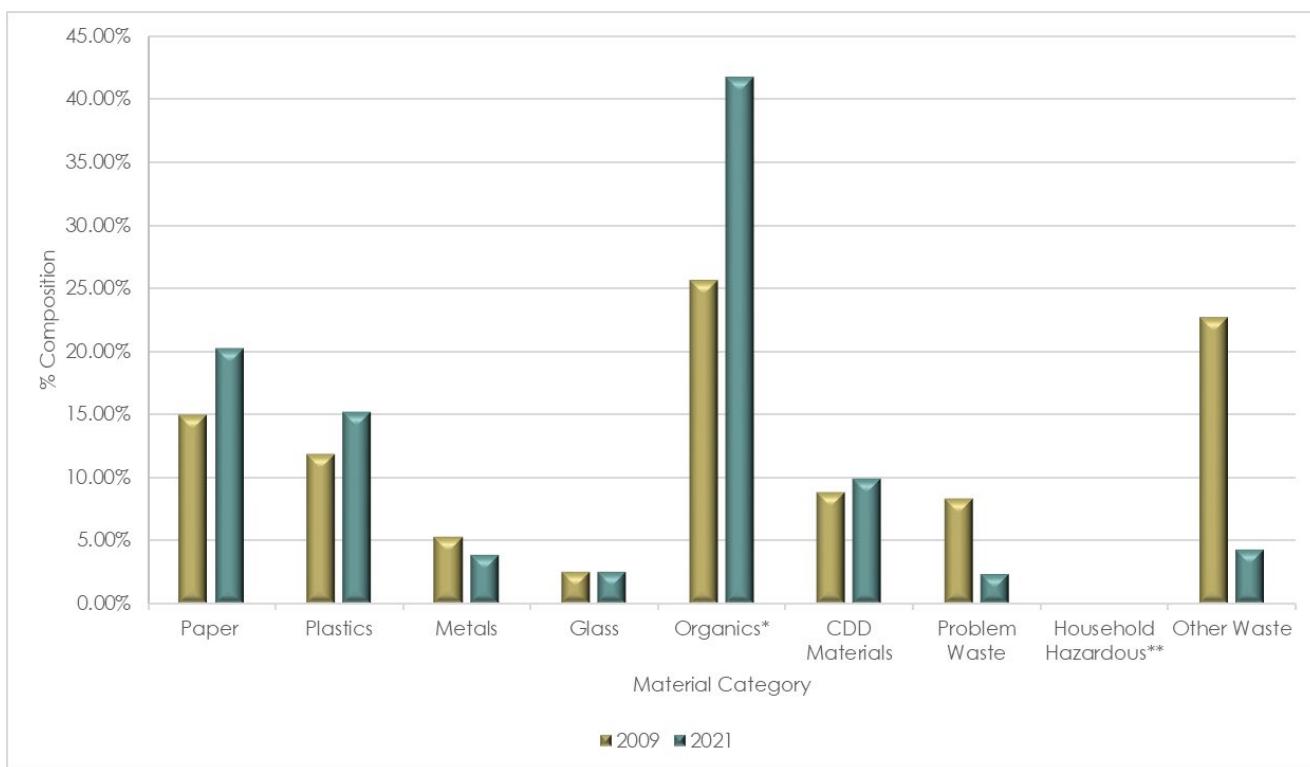
Exhibit 36. Comparison of Single Family Residential Material Category Composition  
2009 vs. 2020-2021



\*End of Sample Fines were incorporated into Organics for comparison purposes.

\*\*Household Hazardous Waste is included in Problem Waste for 2020-2021 data.

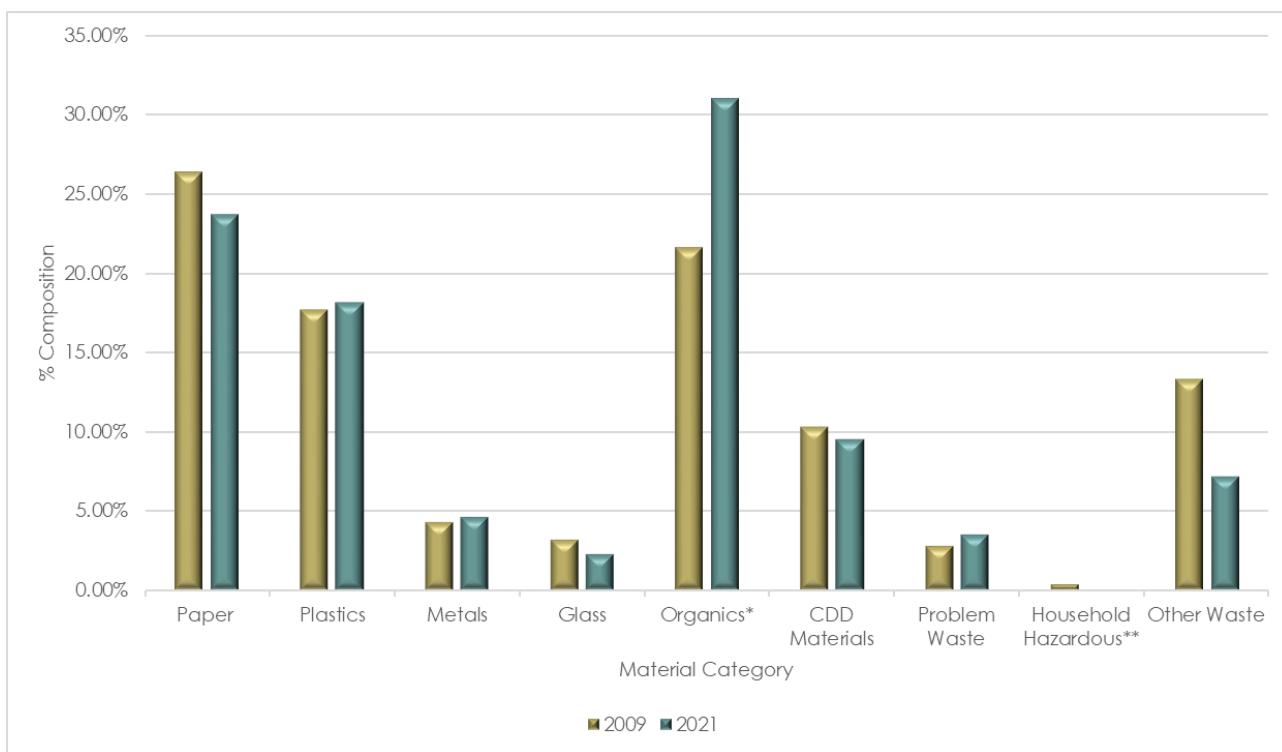
Exhibit 37. Comparison of Multi-Family Residential Material Category Composition  
2009 vs. 2020-2021



\*End of Sample Fines were incorporated into Organics for comparison purposes.

\*\*Household Hazardous Waste is included in Problem Waste for 2020-2021 data.

Exhibit 38. Comparison of ICI Material Category Composition 2009 vs. 2020-2021



\*End of Sample Fines were incorporated into Organics for comparison purposes.

\*\*Household Hazardous Waste is included in Problem Waste for 2020-2021 data.

## 7 COMPARISON TO 2009 STUDY

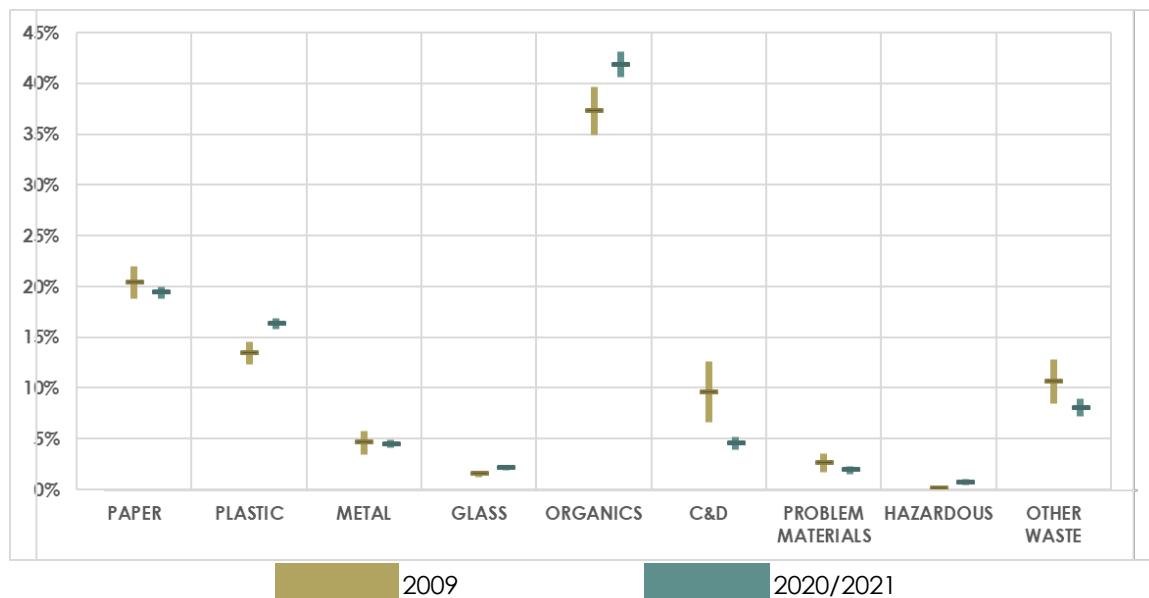
Waste compositions derived for the single family residential and ICI sectors in 2020/2021 were compared to waste compositions derived for the same sectors in 2009. Most material classifications were consistent between the 2009 and 2020-2021 studies; however, some material types were combined for comparison purposes, specifically:

- Other Paper includes both “Other Paper” and “Cartons – Aseptic/Gable Top Containers”
- Other Plastic Bottles includes “PP (#6) Bottles” and “Other (#3,#4,#6,#7) Bottles”
- Other Rigid Plastic Packaging includes the following:
  - PET Non-Bottle Rigid Containers & Packaging
  - HDPE Non-Bottle Rigid Containers & Packaging
  - PP (#5) Non-Bottle Rigid containers & Packaging
  - PS (#6) Non-Foam, Non-Bottle Rigid Containers & Packaging
  - Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging
- Other Plastic Film includes “Pouches” and “Other Flexible Film”
- Food includes “Food Scraps (Not Traditionally Edible)” and “Wasted Food”
- Bottom Fines/Dirt includes the “Total End of Sample Fines” and “Dirt”

## SINGLE FAMILY RESIDENTIAL WASTE

Exhibit 39 presents a comparison of major material categories between the two studies.

Exhibit 39. Comparison of Single Family Residential Major Material Categories  
2009 vs 2020-2021



Major material categories that are higher in 2020-2021 than in 2009 with statistical confidence include:

- Plastic (12.3 to 13.4 percent in 2009; 15.9 to 16.9 percent in 2020-2021)
- Glass (1.2 to 1.7 percent in 2009; 2.0 to 2.5 percent in 2020-2021)
- Organics (34.9 to 39.6 percent in 2009; 40.6 to 43.1 percent in 2020-2021)
- Hazardous (from <0.1 to 0.2 percent in 2009; 0.5 to 1.1 percent in 2020-2021)

Major material categories that are lower in 2020-2021 than in 2009 with statistical confidence include:

- C&D (6.6 to 12.6 percent in 2009; 4.0 to 5.3 percent in 2020-2021)

Table 54 presents a comparison for individual material components in single family residential waste from 2009 to 2020-2021.

Table 54. Comparison of Single Family Residential Material Component Proportions  
 2009 vs 2020-2021  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

Material Components	2009			2021			Statistical Comparison <sup>1</sup>
	Lower	Mean	Upper	Lower	Mean	Upper	
<b>PAPER</b>							
1 Newsprint (ONP)	1.9%	2.5%	3.2%	0.7%	0.9%	1.0%	Lower
2 High Grade Office Paper	0.5%	0.7%	0.9%	1.2%	1.3%	1.5%	Higher
3 Magazines/Catalogs	1.3%	1.6%	1.9%	0.7%	0.8%	0.9%	Lower
4 Uncoated OCC - Recyclable	1.6%	2.0%	2.5%	1.7%	1.9%	2.2%	--
5 Coated OCC	0.1%	0.2%	0.3%	<0.1%	<0.1%	0.1%	--
6 Boxboard	1.3%	1.5%	1.7%	1.2%	1.4%	1.5%	--
8 Mixed Paper - Recyclable	2.1%	2.4%	2.8%	4.2%	4.5%	4.8%	Higher
9 Compostable Paper	6.4%	7.2%	8.0%	5.3%	5.6%	5.9%	Lower
7/10 Other Paper (inc. aseptic/gable top)	1.8%	2.2%	2.5%	2.8%	3.0%	3.2%	Higher
<b>Total Paper</b>	<b>18.8%</b>	<b>20.4%</b>	<b>22.0%</b>	<b>18.9%</b>	<b>19.5%</b>	<b>20.0%</b>	--
<b>PLASTIC</b>							
11 PET (#1) Bottles	0.4%	0.5%	0.6%	1.4%	1.5%	1.7%	Higher
12 Natural HDPE (#2) Bottles	0.1%	0.2%	0.2%	0.2%	0.2%	0.3%	--
13 Colored HDPE (#2) Bottles	0.2%	0.3%	0.4%	0.4%	0.5%	0.5%	--
14/15 Other Plastic Bottles (#3-#7)	0.1%	0.2%	0.2%	<0.1%	<0.1%	<0.1%	Lower
16-20 Other Rigid Plastic Packaging	1.1%	1.3%	1.5%	2.6%	2.7%	2.8%	Higher
21 Rigid Non-Packaging	NS	NS	NS	1.3%	1.5%	1.6%	NS
22 Bulky Rigid Plastics	NS	NS	NS	0.4%	0.6%	0.7%	NS
23 PE Recyclable Film	NS	NS	NS	0.9%	1.0%	1.1%	NS
24 Agricultural Film	<0.1%	<0.1%	0.1%	0.1%	0.2%	0.3%	Higher
25/26 Other Plastic Film	3.6%	4.0%	4.4%	6.1%	6.4%	6.7%	Higher
27 PS Foam (#6)	NS	0.7%	NS	0.8%	0.9%	0.9%	--
28 Compostable Plastics	NS	NS	NS	<0.1%	<0.1%	<0.1%	NS
29 Other Plastics	NS	NS	NS	0.7%	0.8%	1.0%	NS
<b>Total Plastic</b>	<b>12.3%</b>	<b>13.4%</b>	<b>14.5%</b>	<b>15.9%</b>	<b>16.4%</b>	<b>16.9%</b>	<b>Higher</b>
<b>METAL</b>							
30 Aluminum Beverage Containers	0.2%	0.3%	0.4%	0.6%	0.7%	0.8%	Higher
31 Other Aluminum	0.2%	0.4%	0.6%	0.4%	0.5%	0.5%	--
32 Ferrous ("Tin") Cans	0.6%	0.7%	0.8%	0.6%	0.6%	0.7%	--
33 Other Ferrous Scrp	0.3%	0.8%	1.2%	1.0%	1.3%	1.6%	--
34 Non-Ferrous Metals	<0.1%	0.3%	0.6%	<0.1%	<0.1%	0.1%	--
35 Other Metal	1.2%	2.1%	3.0%	1.1%	1.4%	1.7%	--
<b>Total Metals</b>	<b>3.4%</b>	<b>4.6%</b>	<b>5.7%</b>	<b>4.1%</b>	<b>4.6%</b>	<b>5.0%</b>	--

Table 54. Comparison of Single Family Residential Material Component Proportions  
2009 vs 2020-2021 (continued)  
(refer to Appendices B and E for descriptions of waste types and acronyms)

<b>GLASS</b>							
36 Clear Containers - Beverage	0.2%	0.3%	0.4%	0.4%	0.6%	0.8%	Higher
37 Colored Containers - Beverage	0.3%	0.4%	0.6%	0.4%	0.5%	0.6%	--
38 Glass Food Containers	0.3%	0.4%	0.4%	0.4%	0.5%	0.6%	Higher
39 Other Glass	0.3%	0.4%	0.5%	0.5%	0.6%	0.7%	--
<b>Total Glass</b>	<b>1.2%</b>	<b>1.5%</b>	<b>1.7%</b>	<b>2.0%</b>	<b>2.2%</b>	<b>2.5%</b>	<b>Higher</b>
<b>ORGANICS</b>							
40 Yard Materials - <6"	5.0%	6.5%	8.0%	2.1%	2.7%	3.3%	Lower
41 Yard Materials - >6"	<0.1%	0.4%	0.8%	<0.1%	0.2%	0.4%	--
42/3 Food	15.8%	17.5%	19.1%	19.9%	20.8%	21.7%	Higher
44 Diapers	2.8%	3.4%	4.0%	3.9%	4.2%	4.6%	--
45 Animal Waste/Kitty Litter	2.2%	2.9%	3.6%	2.5%	2.9%	3.4%	--
46 Bottom Fines/Dirt	3.6%	4.5%	5.3%	8.4%	9.0%	9.6%	Higher
47 Other Organic Material	1.7%	2.2%	2.8%	1.8%	2.0%	2.3%	--
<b>Total Organics</b>	<b>34.9%</b>	<b>37.3%</b>	<b>39.6%</b>	<b>40.6%</b>	<b>41.9%</b>	<b>43.1%</b>	<b>Higher</b>
<b>CONSTRUCTION &amp; DEMOLITION</b>							
48 Treated Wood	<0.1%	0.4%	0.7%	0.3%	0.5%	0.6%	--
49 Untreated Clean Dimensional Lumber	0.2%	0.5%	0.8%	0.4%	0.6%	0.8%	--
50 Untreated Clean Engineered Wood	0.1%	0.4%	0.5%	0.4%	0.6%	0.7%	--
51 Painted/Stained Wood	2.1%	3.6%	5.1%	0.4%	0.7%	0.9%	Lower
52 Other Recyclable Wood	0.1%	0.2%	0.3%	0.1%	0.2%	0.3%	--
53 Rock, Concrete, Brick	<0.1%	0.1%	0.2%	<0.1%	0.2%	0.3%	--
54 Gypsum Wallboard - Demo	<0.1%	0.5%	0.9%	0.2%	0.4%	0.6%	--
55 Gypsum Wallboard - Clean Scrap	<0.1%	0.1%	0.2%	<0.1%	<0.1%	<0.1%	--
56 Roofing Shingles	<0.1%	1.1%	2.3%	<0.1%	<0.1%	<0.1%	--
57 PVC	<0.1%	0.4%	0.8%	<0.1%	<0.1%	<0.1%	--
58 Ceramics/Porcelain Fixtures	<0.1%	0.6%	1.3%	<0.1%	0.1%	0.2%	--
59 Other C&D	1.0%	1.8%	2.6%	1.0%	1.3%	1.6%	--
<b>Total Construction &amp; Demolition</b>	<b>6.6%</b>	<b>9.6%</b>	<b>12.6%</b>	<b>4.0%</b>	<b>4.6%</b>	<b>5.3%</b>	<b>Lower</b>
<b>PROBLEM MATERIALS</b>							
60 Televisions - CRT	<0.1%	0.4%	0.8%	<0.1%	0.1%	0.3%	--
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
62 Other Banned Electronic Equipment	NS	NS	NS	0.2%	0.4%	0.5%	NS
63 Non-Banned Electronic Equipment	NS	NS	NS	0.3%	0.4%	0.5%	NS
64 Small Electrical Appliances	0.5%	1.0%	1.5%	0.5%	0.7%	1.0%	--
65 White Goods - Refrigerated	0.4%	0.4%	0.9%	<0.1%	<0.1%	0.1%	Lower
66 White Goods - Non-Refrigerated	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.2%	--
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
68 Other Batteries	0.1%	0.1%	0.2%	0.1%	0.2%	0.2%	--
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	Higher
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	Higher
71 Tires	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.2%	--
<b>Total Problem Materials</b>	<b>1.7%</b>	<b>2.6%</b>	<b>3.5%</b>	<b>1.6%</b>	<b>2.0%</b>	<b>2.4%</b>	<b>--</b>
<b>HAZARDOUS</b>							
72 Paint	<0.1%	<0.1%	0.1%	<0.1%	0.2%	0.4%	--
73 Automotive Used Oil/Filters	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	Higher
74 Household Hazardous Waste	<0.1%	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	--
75 Sharps, Needles, Lancets	NS	NS	NS	<0.1%	<0.1%	<0.1%	Lower
76 Other Problem Materials	NS	NS	NS	0.2%	0.4%	0.7%	Lower
<b>Total Hazardous</b>	<b>&lt;0.1%</b>	<b>0.1%</b>	<b>0.2%</b>	<b>0.5%</b>	<b>0.8%</b>	<b>1.1%</b>	<b>Higher</b>

Table 54. Comparison of Single Family Residential Material Component Proportions  
 2009 vs 2020-2021 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

Material Components	2009			2021			Statistical Comparison <sup>1</sup>
	Lower	Mean	Upper	Lower	Mean	Upper	
<b>OTHER WASTE</b>							
77 Textiles	2.3%	2.7%	3.2%	5.8%	6.3%	6.9%	Higher
78 Carpet	2.4%	3.8%	5.1%	0.5%	0.8%	1.1%	Lower
79 Carpet Padding	0.4%	0.9%	1.5%	<0.1%	<0.1%	0.1%	Lower
80 Wood Pallets	<0.1%	0.4%	0.9%	<0.1%	<0.1%	0.2%	--
81 Bulky Items	0.3%	1.0%	1.8%	<0.1%	<0.1%	<0.1%	Lower
82 Mattresses and Box Springs	NS	NS	NS	<0.1%	<0.1%	<0.1%	Lower
83 Wood Furniture	1.0%	1.8%	2.5%	0.2%	0.5%	0.8%	Lower
84 Aerosol Cans	NS	NS	NS	0.2%	0.2%	0.3%	Lower
85 Compressed Gas Containers	NS	NS	NS	<0.1%	<0.1%	<0.1%	Lower
<b>Total Other Waste</b>	<b>8.4%</b>	<b>10.6%</b>	<b>12.8%</b>	<b>7.3%</b>	<b>8.1%</b>	<b>9.0%</b>	--
<b>TOTALS</b>	<b>100.0%</b>			<b>100.0%</b>			

Note: Composition based on 86 samples in 2009 and 213 samples in 2021.

1. "Lower" indicates lower proportion of material in 2020/2021 study compared to the 2009 study with statistical confidence.

"Higher" indicates higher proportion of material in 2020/2021 study compared to the 2009 study with statistical confidence.

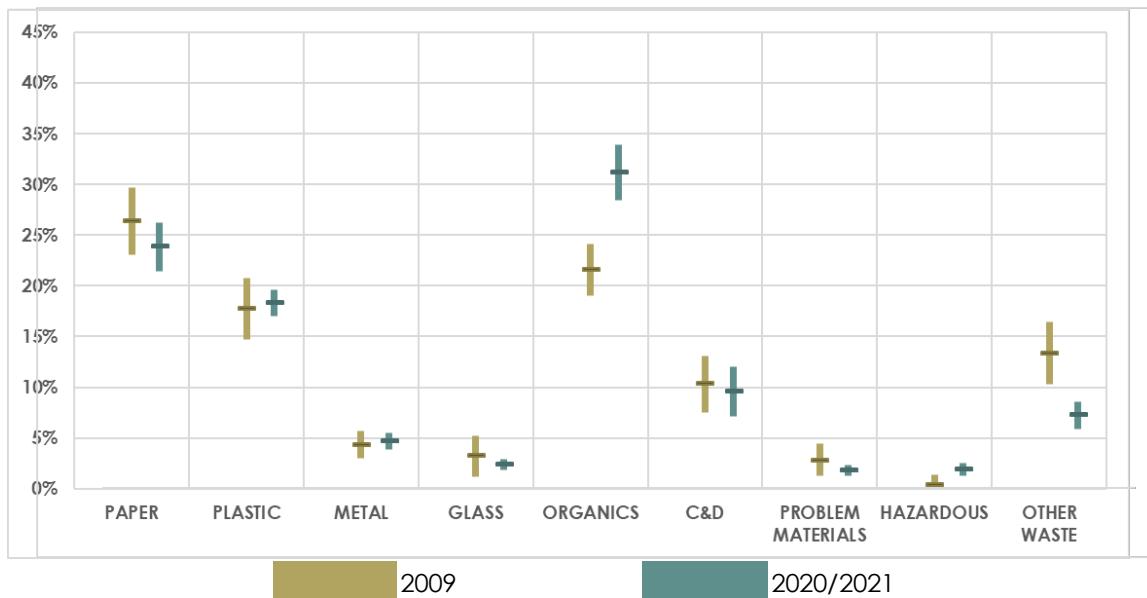
2. For comparison between the 2009 and 2020/2021 studies, the following categories were adjusted

- a. Other Paper includes Cartons - Aseptic/Gable Top Containers
- b. Other Plastic Bottles (#3-#7) includes PP (#5) Bottles and Other (#3,4,6,7) Bottles
- c. Other Rigid Plastic Packaging includes Non Bottles Rigid Containers and Packaging for PET, HDPE, PP and Non-Foam PS
- d. Other Plastic Film includes Pouches and Other Flexible Film

## INSTITUTIONAL/COMMERCIAL/INDUSTRIAL (ICI)

Exhibit 40 presents a comparison of major material categories between the two studies.

Exhibit 40. Comparison of ICI Major Material Components  
2009 vs 2020-2021



Major material categories that are higher in 2020-2021 than in 2009 with statistical confidence include:

- Organics (19.9 to 24.1 percent in 2009; 28.3 to 33.7 percent in 2020-2021)

Major material categories that are lower in 2020-2021 than in 2009 with statistical confidence include:

- Other Waste (10.3 to 16.4 percent in 2009; 5.8 to 18.5 percent in 2020-2021)

Table 55 presents a comparison for individual material components in single family residential waste from 2009 to 2020-2021.

Table 55. Comparison of ICI Material Component Proportions  
 2009 vs 2020-2021  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

Material Components	2009			2021			Statistical Comparison <sup>1</sup>
	Lower	Mean	Upper	Lower	Mean	Upper	
<b>PAPER</b>							
1 Newsprint (ONP)	0.6%	1.1%	1.6%	0.4%	0.9%	1.4%	--
2 High Grade Office Paper	0.6%	1.0%	1.4%	1.1%	1.6%	2.0%	--
3 Magazines/Catalogs	0.4%	0.7%	1.0%	0.4%	0.7%	0.9%	--
4 Uncoated OCC - Recyclable	5.2%	6.8%	8.4%	3.5%	4.9%	6.3%	--
5 Coated OCC	0.9%	1.6%	2.4%	<0.1%	0.2%	0.3%	Lower
6 Boxboard	0.9%	1.8%	2.6%	0.9%	1.1%	1.2%	--
8 Mixed Paper - Recyclable	1.3%	2.2%	3.0%	4.4%	6.0%	7.5%	Higher
9 Compostable Paper	3.4%	4.2%	5.0%	4.4%	5.1%	5.7%	--
7/10 Other Paper (inc. aseptic/gable top)	4.3%	7.0%	9.6%	2.6%	3.4%	4.3%	Lower
<b>Total Paper</b>	<b>23.0%</b>	<b>26.4%</b>	<b>29.7%</b>	<b>21.3%</b>	<b>23.7%</b>	<b>26.1%</b>	--
<b>PLASTIC</b>							
11 PET (#1) Bottles	0.4%	0.4%	0.5%	1.0%	1.6%	2.2%	Higher
12 Natural HDPE (#2) Bottles	0.1%	0.1%	0.2%	0.3%	0.4%	0.4%	Higher
13 Colored HDPE (#2) Bottles	0.2%	0.2%	0.2%	0.3%	0.4%	0.5%	Higher
14/15 Other Plastic Bottles (#3-#7)	<0.1%	0.1%	0.1%	<0.1%	<0.1%	<0.1%	--
16-20 Other Rigid Plastic Packaging	0.7%	2.7%	3.7%	2.0%	2.3%	2.6%	--
21 Rigid Non-Packaging	NS	NS	NS	1.3%	1.8%	2.2%	NS
22 Bulky Rigid Plastics	NS	NS	NS	0.7%	1.0%	1.3%	NS
23 PE Recyclable Film	NS	NS	NS	0.5%	0.6%	0.7%	NS
24 Agricultural Film	<0.1%	0.4%	0.8%	<0.1%	0.1%	0.2%	--
25/26 Other Plastic Film	2.6%	5.3%	6.9%	7.4%	8.3%	9.2%	Higher
27 PS Foam (#6)	NS	1.0%	NS	0.6%	0.7%	0.8%	--
28 Compostable Plastics	NS	NS	NS	<0.1%	<0.1%	<0.1%	NS
29 Other Plastics	NS	NS	NS	0.8%	1.1%	1.0%	NS
<b>Total Plastic</b>	<b>14.7%</b>	<b>17.7%</b>	<b>20.7%</b>	<b>16.9%</b>	<b>18.2%</b>	<b>19.4%</b>	--
<b>METAL</b>							
30 Aluminum Beverage Containers	0.1%	0.2%	0.2%	0.5%	0.6%	0.7%	Higher
31 Other Aluminum	0.1%	0.1%	0.1%	0.1%	0.4%	0.8%	Higher
32 Ferrous ("Tin") Cans	0.2%	0.4%	0.6%	0.4%	0.5%	0.6%	--
33 Other Ferrous Scrp	0.9%	1.6%	2.2%	1.0%	1.5%	2.0%	--
34 Non-Ferrous Metals	<0.1%	0.2%	0.4%	<0.1%	<0.1%	<0.1%	--
35 Other Metal	0.8%	1.9%	2.9%	1.0%	1.6%	2.1%	--
<b>Total Metals</b>	<b>3.0%</b>	<b>4.3%</b>	<b>5.7%</b>	<b>3.8%</b>	<b>4.6%</b>	<b>5.4%</b>	--

Table 55. Comparison of ICI Material Component Proportions  
2009 vs 2020-2021 (continued)  
(refer to Appendices B and E for descriptions of waste types and acronyms)

Material Components	2009			2021			Statistical Comparison <sup>1</sup>
	Lower	Mean	Upper	Lower	Mean	Upper	
<b>GLASS</b>							
36 Clear Containers - Beverage	0.2%	0.3%	0.5%	0.5%	0.6%	0.8%	--
37 Colored Containers - Beverage	0.1%	0.4%	0.8%	0.4%	0.5%	0.6%	--
38 Glass Food Containers	<0.1%	0.1%	0.1%	0.2%	0.2%	0.3%	Higher
39 Other Glass	0.7%	2.3%	4.0%	0.4%	0.9%	1.4%	--
<b>Total Glass</b>	<b>1.2%</b>	<b>3.2%</b>	<b>5.2%</b>	<b>1.8%</b>	<b>2.3%</b>	<b>2.8%</b>	--
<b>ORGANICS</b>							
40 Yard Materials - <6"	1.5%	2.7%	3.9%	0.5%	0.9%	1.2%	Lower
41 Yard Materials - >6"	<0.1%	0.5%	0.9%	<0.1%	0.2%	0.4%	--
42/3 Food	9.3%	11.4%	13.4%	16.7%	18.8%	20.9%	Higher
44 Diapers	0.6%	1.7%	2.8%	2.0%	2.5%	3.0%	--
45 Animal Waste/Kitty Litter	0.3%	0.9%	1.4%	1.0%	1.6%	2.1%	--
46 Bottom Fines/Dirt	2.2%	3.1%	4.1%	4.5%	5.2%	5.9%	Higher
47 Other Organic Material	0.9%	1.3%	1.8%	1.5%	1.9%	2.3%	--
<b>Total Organics</b>	<b>19.0%</b>	<b>21.6%</b>	<b>24.1%</b>	<b>28.3%</b>	<b>31.0%</b>	<b>33.7%</b>	<b>Higher</b>
<b>CONSTRUCTION &amp; DEMOLITION</b>							
48 Treated Wood	0.1%	0.7%	1.3%	0.2%	0.4%	0.7%	--
49 Untreated Clean Dimensional Lumber	0.6%	1.3%	1.9%	1.3%	2.3%	3.2%	--
50 Untreated Clean Engineered Wood	1.0%	1.8%	2.7%	0.6%	1.6%	2.5%	--
51 Painted/Stained Wood	1.2%	2.2%	3.2%	0.5%	1.6%	2.6%	--
52 Other Recyclable Wood	0.2%	1.0%	1.8%	<0.1%	0.5%	1.2%	--
53 Rock, Concrete, Brick	<0.1%	0.8%	1.7%	<0.1%	<0.1%	<0.1%	--
54 Gypsum Wallboard - Demo	<0.1%	0.5%	1.2%	0.3%	1.1%	1.8%	--
55 Gypsum Wallboard - Clean Scrap	<0.1%	0.2%	0.6%	<0.1%	0.4%	1.1%	--
56 Roofing Shingles	<0.1%	0.2%	0.6%	<0.1%	<0.1%	0.2%	--
57 PVC	<0.1%	0.2%	0.3%	<0.1%	<0.1%	0.1%	--
58 Ceramics/Porcelain Fixtures	<0.1%	0.1%	0.2%	<0.1%	0.2%	0.4%	--
59 Other C&D	0.5%	1.1%	1.7%	0.8%	1.3%	1.8%	--
<b>Total Construction &amp; Demolition</b>	<b>7.5%</b>	<b>10.3%</b>	<b>13.1%</b>	<b>7.1%</b>	<b>9.5%</b>	<b>12.0%</b>	--
<b>PROBLEM MATERIALS</b>							
60 Televisions - CRT	<0.1%	0.4%	0.9%	<0.1%	<0.1%	<0.1%	--
61 Televisions - Non-CRT	<0.1%	0.3%	0.5%	<0.1%	<0.1%	<0.1%	--
62 Other Banned Electronic Equipment	NS	NS	NS	0.2%	0.3%	0.5%	NS
63 Non-Banned Electronic Equipment	NS	NS	NS	0.2%	0.3%	0.5%	NS
64 Small Electrical Appliances	0.3%	0.8%	1.3%	0.3%	0.5%	0.7%	--
65 White Goods - Refrigerated	<0.1%	0.2%	0.6%	<0.1%	<0.1%	0.2%	--
66 White Goods - Non-Refrigerated	<0.1%	0.1%	0.3%	<0.1%	<0.1%	<0.1%	--
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.1%	--
68 Other Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	Higher
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	Higher
71 Tires	<0.1%	0.5%	1.1%	<0.1%	0.4%	0.7%	--
<b>Total Problem Materials</b>	<b>1.3%</b>	<b>2.8%</b>	<b>4.4%</b>	<b>1.2%</b>	<b>1.7%</b>	<b>2.2%</b>	--
<b>HAZARDOUS</b>							
72 Paint	<0.1%	<0.1%	<0.1%	<0.1%	0.1%	0.3%	--
73 Automotive Used Oil/Filters	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	Higher
74 Household Hazardous Waste	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	Higher
75 Sharps, Needles, Lancets	<0.1%	NS	NS	<0.1%	<0.1%	<0.1%	--
76 Other Problem Materials	NS	NS	NS	0.9%	1.6%	2.2%	Lower
<b>Total Hazardous</b>	<b>&lt;0.1%</b>	<b>0.4%</b>	<b>1.4%</b>	<b>1.2%</b>	<b>1.8%</b>	<b>2.5%</b>	--

Table 55. Comparison of ICI Material Component Proportions  
 2009 vs 2020-2021 (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

Material Components	2009			2021			Statistical Comparison <sup>1</sup>
	Lower	Mean	Upper	Lower	Mean	Upper	
<b>OTHER WASTE</b>							
77 Textiles	1.7%	3.0%	4.3%	3.5%	4.5%	5.5%	--
78 Carpet	1.4%	2.6%	3.8%	0.6%	1.3%	2.0%	--
79 Carpet Padding	0.2%	0.8%	1.4%	<0.1%	0.2%	0.3%	--
80 Wood Pallets	1.3%	2.8%	4.4%	<0.1%	0.4%	0.8%	Lower
81 Bulky Items	1.0%	2.2%	3.3%	<0.1%	<0.1%	<0.1%	Lower
82 Mattresses and Box Springs	NS	NS	NS	<0.1%	<0.1%	<0.1%	Lower
83 Wood Furniture	1.1%	2.0%	2.9%	0.2%	0.7%	1.1%	Lower
84 Aerosol Cans	NS	NS	NS	0.1%	0.1%	0.2%	Lower
85 Compressed Gas Containers	NS	NS	NS	<0.1%	<0.1%	<0.1%	Lower
<b>Total Other Waste</b>	<b>10.3%</b>	<b>13.3%</b>	<b>16.4%</b>	<b>5.8%</b>	<b>7.2%</b>	<b>8.5%</b>	<b>Lower</b>
<b>TOTALS</b>	<b>100.0%</b>			<b>100.0%</b>			

Note: Composition based on 114 samples in 2009 and 157 samples in 2021.

1. "Lower" indicates lower proportion of material in 2020/2021 study compared to the 2009 study with statistical confidence.

"Higher" indicates higher proportion of material in 2021/2021 study compared to the 2009 study with statistical confidence.

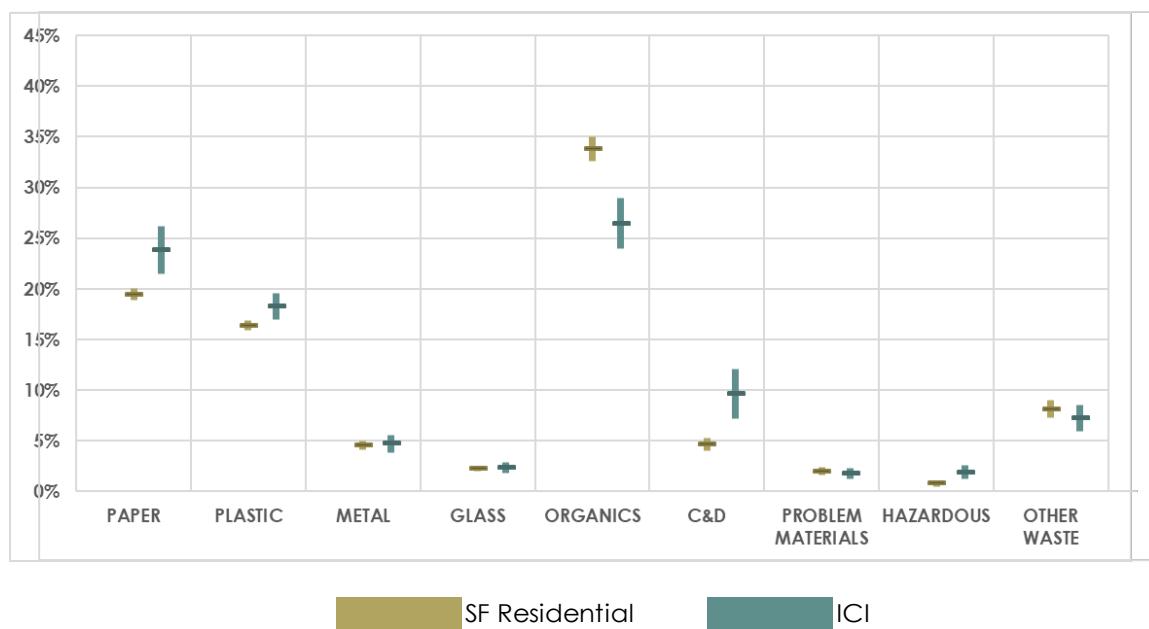
2. For comparison between the 2009 and 2020/2021 studies, the following categories were adjusted

- a. Other Paper includes Cartons - Aseptic/Gable Top Containers
- b. Other Plastic Bottles (#3-#7) includes PP (#5) Bottles and Other (#3,4,6,7) Bottles
- c. Other Rigid Plastic Packaging includes Non Bottles Rigid Containers and Packaging for PET, HDPE, PP and Non-Foam PS
- d. Other Plastic Film includes Pouches and Other Flexible Film

## 8 COMPARISON OF SINGLE FAMILY RESIDENTIAL TO ICI

Exhibit 41 presents a comparison of major material categories between the single family residential and ICI sectors.

Exhibit 41. Comparison of Single Family Residential and ICI Major Material Categories



Major material categories that are higher in ICI sector than in the single family residential sector include:

- Paper (18.9 to 20.0 percent in SFR; 21.3 to 26.1 percent in ICI)
- C&D (4.0 to 5.3 percent in SFR; 7.1 to 12.0 percent in ICI)
- Hazardous (0.5 to 1.1 percent in SFR; 1.2 to 2.5 percent in ICI)

Major material categories that are lower in the ICI sector than in the single family residential sector include:

- Organics (32.6 to 35.0 percent in SFR; 23.8 to 28.8 percent in ICI)
- End of Sample Fines (7.6 to 8.5 percent in SFR; 4.1 to 5.3 percent in ICI)

Table 56 presents a comparison for individual material components in single family residential waste and ICI waste from 2020-2021.

Table 56. Comparison of Single Family Residential and ICI Material Component Proportions  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

Material Components	SF RESIDENTIAL			ICI			Statistical Comparison <sup>1</sup>
	Lower	Mean	Upper	Lower	Mean	Upper	
<b>PAPER</b>							
1 Newsprint (ONP)	0.7%	0.9%	1.0%	0.4%	0.9%	1.4%	--
2 High Grade Office Paper	1.2%	1.3%	1.5%	1.1%	1.6%	2.0%	--
3 Magazines/Catalogs	0.7%	0.8%	0.9%	0.4%	0.7%	0.9%	--
4 Uncoated OCC - Recyclable	1.7%	1.9%	2.2%	3.5%	4.9%	6.3%	Higher
5 Coated OCC	<0.1%	<0.1%	0.1%	<0.1%	0.2%	0.3%	--
6 Boxboard	1.2%	1.4%	1.5%	0.9%	1.1%	1.2%	Lower
7 Cartons - Aseptic/Gable Top Containers	0.2%	0.3%	0.4%	0.3%	0.5%	0.7%	--
8 Mixed Paper - Recyclable	4.2%	4.5%	4.8%	4.4%	6.0%	7.5%	--
9 Compostable Paper	5.3%	5.6%	5.9%	4.4%	5.1%	5.7%	--
10 Other Paper	2.5%	2.7%	2.9%	2.1%	2.9%	3.8%	--
<b>Total Paper</b>	<b>18.9%</b>	<b>19.5%</b>	<b>20.0%</b>	<b>21.3%</b>	<b>23.7%</b>	<b>26.1%</b>	<b>Higher</b>
<b>PLASTIC</b>							
11 PET (#1) Bottles	1.4%	1.5%	1.7%	1.0%	1.6%	2.2%	--
12 Natural HDPE (#2) Bottles	0.2%	0.2%	0.3%	0.3%	0.4%	0.4%	Higher
13 Colored HDPE (#2) Bottles	0.4%	0.5%	0.5%	0.3%	0.4%	0.5%	--
14 PP (#5) Bottles	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
15 Other (#3, #4, #6, and #7) Bottles	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
16 PET(#1) Non-Bottle Rigid Containers & Packaging	0.4%	0.5%	0.5%	0.3%	0.4%	0.4%	--
17 HDPE (#2) Non-Bottle Rigid Containers & Packaging	0.1%	0.1%	0.2%	<0.1%	0.2%	0.2%	--
18 PP(#5) Non-Bottle Rigid Containers & Packaging	1.2%	1.3%	1.3%	0.9%	1.1%	1.3%	--
19 PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	0.2%	0.2%	0.3%	0.2%	0.3%	0.4%	--
20 Other (#7)/Unidentifiable Non-Bottle Rigid Containers & Packaging	0.5%	0.6%	0.7%	0.3%	0.4%	0.5%	Lower
21 Rigid Non-Packaging	1.3%	1.5%	1.6%	1.3%	1.8%	2.2%	--
22 Bulky Rigid Plastics	0.4%	0.6%	0.7%	0.7%	1.0%	1.3%	--
23 PE Recyclable Film	0.9%	1.0%	1.1%	0.5%	0.6%	0.7%	Lower
24 Agricultural Firlm	0.1%	0.2%	0.3%	<0.1%	0.1%	0.2%	--
25 Pouches	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
26 Other Flexible Films	6.1%	6.4%	6.6%	7.4%	8.3%	9.2%	Higher
27 PS Foam (#6)	0.8%	0.9%	0.9%	0.6%	0.7%	0.8%	--
28 Compostable Plastics	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
29 Other Plastics	0.7%	0.8%	1.0%	0.8%	1.1%	1.3%	--
<b>Total Plastic</b>	<b>15.9%</b>	<b>16.4%</b>	<b>16.9%</b>	<b>16.9%</b>	<b>18.2%</b>	<b>19.4%</b>	--
<b>METAL</b>							
30 Aluminum Beverage Containers	0.6%	0.7%	0.8%	0.5%	0.6%	0.7%	--
31 Other Aluminum	0.4%	0.5%	0.5%	0.1%	0.4%	0.8%	--
32 Ferrous ("Tin") Cans	0.6%	0.6%	0.7%	0.4%	0.5%	0.6%	Lower
33 Other Ferrous Scrp	1.0%	1.3%	1.6%	1.0%	1.5%	2.0%	--
34 Non-Ferrous Metals	<0.1%	<0.1%	0.1%	<0.1%	<0.1%	<0.1%	--
35 Other Metal	1.1%	1.4%	1.7%	1.0%	1.6%	2.1%	--
<b>Total Metals</b>	<b>4.1%</b>	<b>4.6%</b>	<b>5.0%</b>	<b>3.8%</b>	<b>4.6%</b>	<b>5.4%</b>	--

Table 56. Comparison of Single Family Residential and ICI Material Component Proportions (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

Material Components	SF RESIDENTIAL			ICI			Statistical Comparison <sup>1</sup>
	Lower	Mean	Upper	Lower	Mean	Upper	
<b>GLASS</b>							
36 Clear Containers - Beverage	0.4%	0.6%	0.8%	0.5%	0.6%	0.8%	--
37 Colored Containers - Beverage	0.4%	0.5%	0.6%	0.4%	0.5%	0.6%	--
38 Glass Food Containers	0.4%	0.5%	0.6%	0.2%	0.2%	0.3%	Lower
39 Other Glass	0.5%	0.6%	0.7%	0.4%	0.9%	1.4%	--
<b>Total Glass</b>	<b>2.0%</b>	<b>2.2%</b>	<b>2.5%</b>	<b>1.8%</b>	<b>2.3%</b>	<b>2.8%</b>	--
<b>ORGANICS</b>							
40 Yard Materials - <6"	2.1%	2.7%	3.3%	0.5%	0.9%	1.2%	Lower
41 Yard Materials - >6"	<0.1%	0.2%	0.4%	<0.1%	0.2%	0.4%	--
42 Food Scraps (Not Traditionally Edible)	5.9%	6.4%	6.9%	3.7%	4.5%	5.4%	Lower
43 Wasted Food	13.5%	14.3%	15.1%	12.4%	14.3%	16.2%	--
44 Diapers	3.9%	4.2%	4.6%	2.0%	2.5%	3.0%	Lower
45 Animal Waste/Kitty Litter	2.5%	2.9%	3.4%	1.0%	1.6%	2.1%	Lower
46 Bottom Fines/Dirt	0.6%	1.0%	1.4%	0.2%	0.5%	0.7%	--
47 Other Organic Material	1.8%	2.0%	2.3%	1.5%	1.9%	2.3%	--
<b>Total Organics</b>	<b>32.6%</b>	<b>33.8%</b>	<b>35.0%</b>	<b>23.8%</b>	<b>26.3%</b>	<b>28.8%</b>	<b>Lower</b>
<b>CONSTRUCTION &amp; DEMOLITION</b>							
48 Treated Wood	0.3%	0.5%	0.6%	0.2%	0.4%	0.7%	--
49 Untreated Clean Dimensional Lumber	0.4%	0.6%	0.8%	1.3%	2.3%	3.2%	Higher
50 Untreated Clean Engineered Wood	0.4%	0.6%	0.7%	0.6%	1.6%	2.5%	--
51 Painted/Stained Wood	0.4%	0.7%	0.9%	0.5%	1.6%	2.6%	--
52 Other Recyclable Wood	0.1%	0.2%	0.3%	<0.1%	0.5%	1.2%	--
53 Rock, Concrete, Brick	<0.1%	0.2%	0.3%	<0.1%	<0.1%	<0.1%	Lower
54 Gypsum Wallboard - Demo	0.2%	0.4%	0.6%	0.3%	1.1%	1.8%	--
55 Gypsum Wallboard - Clean Scrap	<0.1%	<0.1%	<0.1%	<0.1%	0.4%	1.1%	--
56 Roofing Shingles	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.2%	--
57 PVC	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.1%	--
58 Ceramics/Porcelain Fixtures	<0.1%	0.1%	0.2%	<0.1%	0.2%	0.4%	--
59 Other C&D	1.0%	1.3%	1.6%	0.8%	1.3%	1.8%	--
<b>Total Construction &amp; Demolition</b>	<b>4.0%</b>	<b>4.6%</b>	<b>5.3%</b>	<b>7.1%</b>	<b>9.5%</b>	<b>12.0%</b>	<b>Higher</b>
<b>PROBLEM MATERIALS</b>							
60 Televisions - CRT	<0.1%	0.1%	0.3%	<0.1%	<0.1%	<0.1%	--
61 Televisions - Non-CRT	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
62 Other Banned Electronic Equipment	0.2%	0.4%	0.5%	0.2%	0.3%	0.5%	--
63 Non-Banned Electronic Equipment	0.3%	0.4%	0.5%	0.2%	0.3%	0.5%	--
64 Small Electrical Appliances	0.5%	0.7%	1.0%	0.3%	0.5%	0.7%	--
65 White Goods - Refrigerated	<0.1%	<0.1%	0.1%	<0.1%	<0.1%	0.2%	--
66 White Goods - Non-Refrigerated	<0.1%	<0.1%	0.2%	<0.1%	<0.1%	<0.1%	--
67 Lead Acid Batteries	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	0.1%	--
68 Other Batteries	0.1%	0.2%	0.2%	<0.1%	<0.1%	<0.1%	Lower
69 Fluorescent Light Tubes	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
70 Compact Fluorescent Light Bulbs	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
71 Tires	<0.1%	<0.1%	0.2%	<0.1%	0.4%	0.7%	--
<b>Total Problem Materials</b>	<b>1.6%</b>	<b>2.0%</b>	<b>2.4%</b>	<b>1.2%</b>	<b>1.7%</b>	<b>2.2%</b>	--

Table 56. Comparison of Single Family Residential and ICI Material Component Proportions (continued)  
 (refer to Appendices B and E for descriptions of waste types and acronyms)

Material Components	SF RESIDENTIAL			ICI			Statistical Comparison <sup>1</sup>
	Lower	Mean	Upper	Lower	Mean	Upper	
<b>HAZARDOUS</b>							
72 Paint	<0.1%	0.2%	0.4%	<0.1%	0.1%	0.3%	--
73 Automotive Used Oil/Filters	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
74 Household Hazardous Waste	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
75 Sharps, Needles, Lancets	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
76 Other Problem Materials	0.2%	0.4%	0.7%	0.9%	1.6%	2.2%	Higher
<b>Total Problem Materials</b>	<b>0.5%</b>	<b>0.8%</b>	<b>1.1%</b>	<b>1.2%</b>	<b>1.8%</b>	<b>2.5%</b>	<b>Higher</b>
<b>OTHER WASTE</b>							
77 Textiles	5.8%	6.3%	6.9%	3.5%	4.5%	5.5%	Lower
78 Carpet	0.5%	0.8%	1.1%	0.6%	1.3%	2.0%	--
79 Carpet Padding	<0.1%	<0.1%	0.1%	<0.1%	0.2%	0.3%	--
80 Wood Pallets	<0.1%	<0.1%	0.2%	<0.1%	0.4%	0.8%	--
81 Bulky Items	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
82 Mattresses and Box Springs	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
83 Wood Furniture	0.2%	0.5%	0.8%	0.2%	0.7%	1.1%	--
84 Aerosol Cans	0.2%	0.2%	0.3%	0.1%	0.1%	0.2%	Lower
85 Compressed Gas Containers	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
<b>Total Other Waste</b>	<b>7.3%</b>	<b>8.1%</b>	<b>9.0%</b>	<b>5.8%</b>	<b>7.2%</b>	<b>8.5%</b>	--
<b>END OF SAMPLE FINES</b>							
Other Paper	0.6%	0.7%	0.9%	0.4%	0.6%	0.7%	--
Other Plastic	0.5%	0.7%	0.8%	0.2%	0.3%	0.4%	Lower
Other Glass	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	--
Bottom Fines/Dirt	2.9%	3.3%	3.7%	1.5%	2.0%	2.5%	Lower
Food Scraps	0.6%	0.7%	0.8%	0.2%	0.3%	0.5%	Lower
Wasted Food	0.4%	0.5%	0.5%	0.2%	0.3%	0.4%	Lower
Other Organics	1.9%	2.2%	2.5%	1.0%	1.2%	1.5%	Lower
<b>Total End of Sample Fines</b>	<b>7.6%</b>	<b>8.0%</b>	<b>8.5%</b>	<b>4.1%</b>	<b>4.7%</b>	<b>5.3%</b>	<b>Lower</b>
<b>TOTAL</b>	100.0%			100.0%			

Note: Composition based on 213 residential samples and 157 ICI samples.

1. "Lower" indicates lower proportion of material in ICI waste compared to residential waste with statistical confidence.
- "Higher" indicates higher proportion of material in ICI waste compared to residential waste with statistical confidence.

## **9 CONCLUSIONS**

This section summarizes the main conclusions from the 2020-2021 Wisconsin Statewide Waste Characterization Study.

- **Comprehensive Analysis** – The 2020-2021 Study successfully characterized 1,057 waste samples from 15 different facilities and four different generating sectors throughout all five of WDNR's regions. Three hundred and ninety eight Category 1 MSW samples were manually sorted and 659 CDD samples were visually characterized over the course of nearly 10 weeks. This extensive analysis should provide the WDNR with important and reliable data on current waste disposal trends in Wisconsin.
- **Design for Comparability** – Although there were some differences in the 2020-2021 Study from the previous Study, there were a number of similarities that will allow the WDNR to compare results and identify waste disposal trends and changes since 2009.
- **Reliable Data** – The 2020-2021 Study minimized the sampling and sorting of mixed waste from transfer trailers. By minimizing these samples the project team was able to sort more pure loads of Single family residential and ICI waste thereby providing more data to calculate results.
- **Increased Diversion Opportunities** – Despite the State's and many communities program and policy efforts to reduce waste and encourage recycling, there still remains opportunities for increased diversion. Organic waste, specifically wasted food and food scraps, remain the most prevalent materials in the disposed waste stream throughout each region and statewide. This Study may provide some useful data the State can use to encourage and promote programs such as edible food recovery, food donation, and composting to reduce the amount of food waste being disposed.

The 2020-2021 Study data presented in this report was collected using established protocols and procedures similar to previous waste characterization studies for the State of Wisconsin. The following two events were ongoing throughout the duration of the Study and may have impacted waste generation and disposal in the State.

- **COVID-19 Pandemic** – The 2020-2021 Study was completed during an unprecedented time while the COVID-19 pandemic dominated the United States and the State of Wisconsin. The pandemic significantly altered nearly everyone's daily lives and likely impacted waste generation and disposal. Throughout the pandemic, many communities reported an increase in the amount of Single family residential waste collected as people stayed and worked from home. Conversely, the amount of ICI waste disposed was reduced as commercial properties became unoccupied and restaurants and other businesses closed and subsequently operated at reduced capacity.
- **Impact of Waste Management and Advanced Disposal Services Acquisition** – The 2020-2021 Study was designed to proportion the number of samples obtained and sorted by waste disposal quantities by region and within each region by the size of the selected host facility. SCS used data from the WDNR tonnage report from 2018 to develop the sampling plan for the Study. With the acquisition of Advanced Disposal Services by Waste Management, SCS understands that waste disposal tonnages shifted among facilities

impacted by the merger (10 host facilities were owned or operated by either Waste Management or Advanced Disposal Services when the Study began). With the shift in waste tonnages it is possible the regional proportion of waste disposed at each host facility may be different from the beginning and end of the Study.

# Appendix A

## Potential Host Facility Questionnaire

# Wisconsin DNR 2020 Statewide Waste Characterization Study

## Potential Host Facility Questionnaire

### Introduction

SCS Engineers (SCS) is working with the Wisconsin Department of Natural Resources (DNR) to complete a statewide characterization study of materials disposed. Wastes to be characterized include single- and multi-family residential, commercial, institutional, industrial, and construction/demolition debris in each of the DNR's regions. We are identifying facilities that receive each of these waste streams to serve as a host facility for the sampling and sorting of waste during the fall of 2020. As a past DNR waste characterization study host facility (2009 and 2002), we believe your facility would be a good fit for this 2020 study. In order to further assess your site, please complete the following questionnaire directly in the spaces provided and return it to SCS Engineers via email at [bdieleman@scsengineers.com](mailto:bdieleman@scsengineers.com).

Please contact Brent Dieleman at 202.841.9827 or [bdieleman@scsengineers.com](mailto:bdieleman@scsengineers.com) if you have questions about this questionnaire or the study. Thank you for your interest in participating.

***Note that responses to this questionnaire will be kept CONFIDENTIAL and will not be shared with DNR. This study is not part of DNR's compliance program.***

### Facility Contact Information

Facility/Site Name:	
DNR Region:	
County:	
Owner and Operator:	
Address:	
City, State, Zip	
Contact Name:	
Title:	
Office Number:	
Cell Phone:	
Email:	
Name of Person Completing Survey:	
Contact Information:	
Will field personnel be required to sign a liability waiver to sort at your facility?	

## Facility Operational Information

### Gate Data

Hours of Operation:	
- Monday-Friday:	
- Saturday:	
- Sunday:	
Number of Scales:	
- Inbound:	
- Outbound:	

### Waste Data

Total Annual Quantity of <b><u>WISCONSIN-GENERATED</u></b> Waste Received (from calendar year 2019, please exclude out of state waste your facility receives from this total):	
--	--

For the 2019 data provided above, please indicate tons received by month:

Jan:	July:
Feb:	Aug:
March:	Sept:
April:	Oct:
May:	Nov:
June:	Dec:

How is the total annual quantity of Wisconsin-generated waste reported above distributed among the following waste generating sectors? **Either provide tonnage data or percent.** Estimates are okay.

Note please **EXCLUDE** waste received from out-of-state sources.

- Single-Family Residential:	
- Multi-Family Residential:	
- Institutional, Commercial, Industrial (ICI):	
- Construction/Demolition Debris:	
- Other, list/describe:	

To understand how COVID-19 has impacted waste receipts as your facility, please provide the quantity of Wisconsin-generated waste received at your facility for the **following three months of 2020:**

April:	May:	June:
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### Haulers

Please list the major haulers transporting the following types of waste to your facility and include, to the extent possible, the types of trucks used (i.e. rear-loader, automated side loader, front-loader, roll-off, etc.)

- Single-Family Residential:	
- Multi-Family Residential:	
- Institutional, Commercial, Industrial (ICI):	
- Construction/Demolition Debris:	
- Other, list/describe:	

### Waste Deliveries

Please indicate what day(s) of the week waste from the following generating sectors are delivered.				
- Single-Family Residential:				
- Multi-Family Residential:				
- Institutional, Commercial, Industrial (ICI):				
- Construction/Demolition Debris:				
- Other, list/describe:				
Is C&D waste tipped/disposed at the same location at your facility as regular MSW? If not, please explain.				
<b>Transferred Waste</b>				
Does your facility receive Wisconsin-generated waste from transfer stations? If yes, please complete the information below:	Yes		No	
Transfer Station Name	Owner and Operator	Contact Name AND Address	Contact Information (phone/email)	Percent of Annual Waste Received
<b>Multi-Family Generated Waste</b>				
An objective of this study is to sample and sort waste generated from multi-family properties. SCS would like to arrange with haulers to deliver waste loads that contain only multi-family property waste, if possible. Please provide the name and contact information for the major haulers that collect waste from multi-family properties in your service area that is disposed at your facility.				
Hauler	Contact Name	Contact Information (phone/email)	Percent of Commercial Waste Received	

<b>Host Facility Support Needs</b>		
Please comment on your facility's ability to provide/meet our needs while onsite characterizing waste. Note that field activities at your site would occur for a minimum of two days, but no more than five days. We anticipate working Monday through Friday during normal operating hours.		
A safe work area with a level surface that is at least 20' by 20' for staff to complete the manual sorting of waste.	Yes	No
Please provide additional details on the potential work area (i.e. proximity to working face? Enclosed in building or open-air? Paved surface? Etc.)		
A safe work area where sort personnel can visually inspect loads of construction/demolition debris prior to disposal.	Yes	No
Please provide additional details on the potential work area available at your facility to visually characterize construction/demolition debris?		

May our work crew use your facility restrooms and/or break area (including storing lunch items in a refrigerator)? Note this is an important component of completing a safe and efficient waste sort, and we can work with host facilities to accommodate your concerns over our usage.	Yes	No
Is there an open-air (i.e. outdoor) area at your facility where up to eight staff can be safe and socially distance to take breaks that is also away from facility operations?	Yes	No
Can you provide a heavy equipment operator to help transport waste samples from the working face or tipping floor to the sorting area?	Yes	No
May we store waste samples (contained and covered) overnight at the sorting area to facilitate a quick start each morning?	Yes	No
Can you provide dumpsters or roll-off containers at the sorting location for placement of trash and/or recyclable materials once materials have been characterized?	Yes	No
Can you appoint a staff person to be the point of contact for the work crew for issues/concerns that might come up during field activities?	Yes	No
Is it possible to remain working at your facility after it closes for the day?	Yes	No
Health and safety is the number one priority for this project and we will include daily safety briefings to start each day. Will onsite field personnel for this project be required to receive site-specific safety training separate from the project safety training we will provide?	Yes	No
Our work crew will be required to wear reflective vests, steel/composite toed boots or shoes, safety glasses, masks, and puncture resistant gloves. What additional personnel protective equipment is required to work at your facility?		
Please provide your facility's requirements/procedures/protocols to keep onsite staff safe from COVID-19?		

## Additional Information

Please provide additional information about your facility that may impact the DNR statewide waste characterization study should your facility serve as a host site. Also, please use this space to indicate if you have questions about the study and someone from SCS Engineers will contact you. Thank you!

## Appendix B

### WDNR Material Category and Component Definitions

## **WDNR Waste Sort Category and Material Definitions**

### **PAPER**

Newsprint (ONP) - printed groundwood newsprint, including glossy advertisements and inserts typically found in newspapers.

High grade office paper - high grade continuous form computer paper, white paper including bond, photocopy and notebook paper, and colored ledger paper primarily found in offices.

Key points:

- Kraft envelopes go into Mixed paper - recyclable.
- If high grade paper is wet, it should still go into this category because it is assumed to have become wet after being discarded.
- If paper is brighter than pastel, it belongs in Mixed paper - recyclable.

Examples:

- Bond computer paper, index cards, computer cards, notebook paper, xerographic and typing paper, tablets (yellow and with clear glue binding), manila folders, white register receipts, non-glossy fax paper.

Magazines/catalogs - magazines, catalogs, promotional materials printed on glossy paper; does not include telephone directories or books.

Uncoated OCC - recyclable - uncoated cardboard with a wavy core and not contaminated with other materials such as wax or plastic coating.

Key points:

- OCC with styrofoam attached to it that cannot be removed belongs in Other paper category.

Coated OCC - cardboard coated with wax or plastic.

Boxboard - chipboard boxes not coated with wax, plastic or metal.

Examples:

- Cereal boxes, other chipboard food containers, shirt boxes.
- Wet-strength papers used to package items such as ice cream and cases of soda pop and beer belong in Mixed paper - recyclable.

Cartons (gable top/aseptic) - food and beverage product packaging

Examples:

- Refrigerated or shelf-stable juice, milk, soy milk, or soup containers

Mixed paper - recyclable - paper that would be included in residential "mixed mail" or commercial "office pack" recycling programs, not including the grades identified above.

Examples:

- Paper bags (including kraft), envelopes, egg cartons, tissue roll cores, telephone directories, books, brightly colored paper, calendars, "junk" mail, tablets with colored glue bindings, wet-strength papers used to package items such as ice cream and cases of soda pop and beer.

Compostable paper - plastic lined paper products meeting ASTM D-6868, food contaminated paper (including OCC) and low-grade paper that does not fit into the mixed paper - recyclable category.

Other paper - all paper that doesn't fit into the categories specified above and items that are primarily paper but include other materials such as plastic or metal.

Key points:

- If the sorter is 99% sure that the generator intended to reuse the paper in such a way that it became contaminated for recycling, put that paper into this category (e.g., paper used to dispose of chewing gum, paper sprayed with paint).
- If it would take an effort to make the paper recyclable, put it into this category.

Examples:

- Paper or boxboard coated with wax, plastic or metal, photographs, laminated paper.

## PLASTICS

PET (#1) bottles/jars - polyethylene terephthalate >2"

Key points:

- Look for the label "1" on the bottom.
- PET and PVC can be differentiated because PET containers have a nub or 'belly button' while PVC containers have a seam or 'smile.'
- Items not clearly identified as PET, narrowing down to a neck, go into Other containers.

Examples:

- Some bottles for beverages, detergent, toiletries and honey, jars for peanut butter and mayonnaise.

Natural HDPE (#2) bottles/jars - unpigmented high-density polyethylene >2"

Key points:

- Look for the label "2" on the bottom.
- Opaque or translucent matte finish.

Examples:

- Clear or uncolored bottles for dairy products, detergent, windshield fluid, eye drops, rubbing alcohol, vinegar, and some shampoo, fabric softener, antifreeze, bleach.

Colored HDPE (#2) bottles/jars - pigmented high-density polyethylene > 2"

Key points:

- Look for the label "2" on the bottom.

Examples:

- Colored bottles for orange juice, detergent, windshield fluid, and some shampoo, fabric softener, antifreeze, bleach.

PP (#5) bottles - polypropylene that narrows at the neck >2"

Other (#3, #4, #6 and #7) bottles - other plastics that narrow at the neck >2"

PET (#1) non-bottle rigid containers and packaging - polyethylene terephthalate tubs, cups, clamshells and trays that are > 2" and <2 gallons

HDPE (#2) non-bottle rigid containers and packaging - high density polyethylene tubs, cups, clamshells and trays that are >2" and <2 gallons

PP (#5) non-bottle rigid containers and packaging - polypropylene tubs, cups, clamshells and trays that are > 2" and <2 gallons

PS (#6) non-foam, non-bottle rigid containers and packaging - non-foam polystyrene tubs, cups, clamshells and trays that are > 2" and <2 gallons

Other (#7)/unidentifiable non-bottle rigid containers and packaging - other tubs, cups, clamshells and trays that are > 2" and <2 gallons

Rigid non-packaging - items >2" and < 2 gallons

Examples:

- Hangers, small plastic toys

Bulky rigid plastics - items > 2 gallons

PE recyclable film - bags and wraps excluding agricultural films

Agricultural film - film plastic used for storage of farm materials such as feed; plastic film used for mulch.

Pouches - flexible containers that are multilayered (PE or multi-resin)

Other flexible films - non-PE film and non-film flexibles

Examples:

- Chip bags, candy wrappers, woven grain bags, contaminated PE film such as garbage bags and salt bags

PS foam (#6) - Expanded polystyrene >2"

Compostable plastics - plastic products meeting ASTM D6400

Other plastics - Items <2" or not covered above including other foam and multi-material items

Examples:

- Twine, strapping, toothbrushes, razors, dust pan brushes, unattached caps

## METALS

Aluminum beverage containers - aluminum beverage containers.

Other aluminum - all aluminum except beverage containers.

Key points:

- If the material is not recognizable as aluminum and it is not attracted to a magnet, it belongs in Other non-ferrous.

Examples:

- Aluminum foil, aluminum pie plates, aluminum siding, aluminum lawn chairs.

Ferrous ("tin") cans - steel food and beverage containers, including steel soft drink, beer and other beverage containers, and steel pet food cans.

Other ferrous scrap - ferrous and alloyed ferrous metal scrap to which a magnet is attracted (includes household, commercial and industrial materials); excluding aerosol cans and compressed gas containers

Examples:

- Metal clothes hangers, sheet metal products, pipes, steel drums, stainless steel cookware, flashing, and metal scraps.

Non-ferrous metal - all other non-magnetic metal, such as brass and copper, that are not recognized as aluminum.

Other metal - metal that cannot be put in any other category. This includes items made mostly of metal but combined with other materials and items made of both ferrous and non-ferrous metals.

Examples:

- Motors, insulated wire, engines, and lawn mowers.

## GLASS

Clear containers - beverage - clear glass beverage containers.

Colored containers - beverage - colored glass beverage containers.

Glass food containers - clear and colored glass food containers.

**Other glass** - all glass that doesn't fit into the categories specified above and items that are primarily glass but include other materials such as plastic or metal.

Key points:

- If the glass is broken and not 100 percent identifiable as food or beverage glass, it belongs in Other glass.

Examples:

- Plate glass, drinking glass, cooking utensils, ash trays, mirrors, Pyrex, dinner plates and other household ceramic items, medicine and chemical bottles, incandescent light bulbs, and fragments.

## **ORGANIC MATERIALS**

**Yard materials** - <6" - leaves, grass clippings, yard and garden debris and brush, including clean woody vegetative material no greater than 6 inches in diameter.

Key points:

- This material does not include stumps, roots or shrubs with intact root balls. Also separate and assess weight of any bags marked as invasive plant species.

**Yard materials** - >6" - woody vegetative material greater than 6 inches in diameter, stumps, roots or shrubs with intact root balls.

**Food scraps** - traditionally inedible material capable of being decomposed by micro-organisms with sufficient rapidity as to cause nuisances from odors and gases; putrescibles.

Examples:

- Food preparation waste, food scraps, kitchen wastes, waste parts from butchered animals.

**Wasted food** - material capable of being decomposed by micro-organisms; putrescibles; that is not a result of preparation waste or scraps, but typically edible or spoiled food that was wasted because of spoilage or discarded before being eaten.

**Diapers** - infant and adult disposable diapers. Cotton diapers belong in Textiles category.

**Animal waste/kitty litter** - self defined.

Key points:

- Animal carcasses belong in Other organic material.

**Bottom fines/dirt** - small fragments that pass through the  $\frac{1}{4}$ " sort screen, and miscellaneous fines and dirt.

**Other organic material** - all organic material that doesn't fit into the categories specified above, and items that are primarily organic but include other materials such as plastic or metal.

Examples:

- Cotton balls, feminine hygiene products, hair, rubber products, and animal carcasses.

## **CONSTRUCTION & DEMOLITION DEBRIS**

Treated wood - lumber that is either green or brown treated.

Examples:

- Railroad ties, some wood fencing and siding, and playground equipment.

Untreated clean dimensional lumber - unpainted, untreated new or demolition dimensional lumber such as 2x4s, 2x6s, etc. May contain nails or other trace contaminants

Unpainted engineered wood - unpainted new or demolition scrap from sheet goods such as plywood, particle board, wafer board, oriented strand board and other residual materials used for sheathing and related construction uses. May contain nails or other trace contaminants including incidental/small amounts of paint such as board ends.

Painted/stained wood - wood that has had an external coating applied, such as paint or varnish in more than small amounts.

Examples:

- Painted siding, baseboards and moldings, cabinets, varnished handrails, finished wood doors.

Other recyclable wood - recyclable wood not included in any other category, including untreated, unpainted scrap from furniture and cabinet making and untreated, unpainted scrap from roofing and siding.

Rock, concrete, brick - rock gravel, Portland cement mixtures (set or unset), fire-clay bricks, asphalt pavement.

Gypsum wallboard - demo - used gypsum drywall typically with paint, wallpaper, or other finish coating.

Gypsum wallboard - clean scrap - unpainted gypsum drywall construction cutoffs and scrap.

Roofing shingles - asphalt shingles tarpaper; also tarpaper from built-up roofing.

PVC - construction and demolition materials made of polyvinyl chloride; primarily piping.

Ceramics/porcelain fixtures - finished ceramic or porcelain household fixtures such as toilets, tiling, and sinks.

Other C&D - any other material used in home construction.

Examples:

- Insulation, linoleum, nails, adhesives, tubs, showers, and cabinets, composite ceiling tiles, fiberglass insulation, asphalt from built-up roofing.

## **PROBLEM MATERIALS**

CRTs - televisions and monitors with cathode-ray tubes. Includes console television and rear projection televisions. COUNT

Televisions and monitors - non-CRT - LCD, LED plasma, and other televisions and monitors without cathode-ray tubes. COUNT

Other banned electronics - other devices banned from landfills in Wisconsin

Examples:

- Laptops, tablets, desktop computer processing units, computer peripherals (keyboards, printers, mice, disk drives, modems, flash drives, scanners, etc.), DVD players, VCRs, DVRs, video game consoles, cellphones and fax machines. COUNT

Non-banned electronic equipment - items with significant circuitry.

Examples:

- Digital cameras, telephones, portable video games, MP3 players, CD players, stereo equipment, phone answering machines. COUNT

Small electrical appliances - small products or appliances with electrical cord or battery power source and may have small electronic devices such as digital readouts and controls but are not heavily reliant on computer circuitry.

Examples:

- Small kitchen and bathroom appliances (toasters, hair dryers, etc.), lamps, fans, vacuum cleaners, and power tools.

White goods - refrigerated - major appliances that are primarily encased in metal and are designed to contain refrigerants. COUNT

Examples:

- Refrigerators, freezers, and dehumidifiers, air conditioners

White goods - non-refrigerated - major appliances that are primarily encased in metal and are not designed to contain refrigerants. COUNT

Examples:

- Stoves, water heaters, washers, dryers, dishwashers, and microwave ovens.

Lead-acid batteries - automotive, tractor, motorcycle, and boat batteries. COUNT

Other batteries - all batteries, including rechargeable and non-rechargeable and button batteries. COUNT  
ALL BUT COMMON HOUSEHOLD ALKALINE DRY CELLS; PHOTO

Fluorescent light tubes - fluorescent light tubes not including fixtures. COUNT

Compact fluorescent light bulbs - compact fluorescent light bulbs not including fixtures. COUNT

Tires - automobile, truck, tractor, motorcycle, bicycle, and trailer tires. COUNT

Paint - latex paint that has not dried, wet and dry oil-based paint, aerosol cans containing paint. Does not include empty paint cans, empty aerosol paint cans.

Automotive - used oil/filters - automotive oil and oil filters. COUNT

Household hazardous waste - all household and commercial products characterized as "toxic," "corrosive," "flammable," "ignitable," "radioactive," "poisonous," and "reactive." COUNT; PHOTO

Examples:

- Cleaners, solvents, antifreeze, acids, bases, mercury containing devices such as thermostats and thermometers (even if containment is broken and mercury is no longer present), pesticides/fertilizers, fluorescent light ballasts, and smoke detectors.

Other problem materials - other problem materials categorized into weights separately when possible. COUNT SHARPS; PHOTO

Examples:

- pharmaceuticals, sharps and infectious waste.

## **OTHER WASTE**

Textiles - clothing, bedding, curtains, blankets, stuffed animals, cotton diapers, other cloth material, and leather goods.

Carpet - general category of flooring applications consisting of various natural or synthetic fibers bonded to some type of backing material.

Carpet padding - polyurethane padding used as a carpet underlay.

Wood pallets - wood pallets and crating materials commonly used for industrial and commercial packaging and shipping.

Bulky items - including upholstered furniture

Mattresses and box springs - self-defined. COUNT

Wood furniture - broken or intact, finished or unfinished wood furniture.

Aerosol cans - self defined. COUNT

Compressed gas containers - self defined. COUNT

## **TASKS**

COUNT = note number of items as well as weight.

PHOTO = provide one digital photograph for this material type from each sorted sample.

Also note incidence of C&D materials in reusable condition and either (1) in quantity, if small, or (2) individually, if large. For example, a door in good condition would count. A couple of hinges in good condition would not, but a box of hinges would count.

## Appendix C

### Example Data Collection Forms

FACILITY: \_\_\_\_\_ DATE: \_\_\_\_\_

CONTAINER NUMBER	TARE WEIGHT	CONTAINER NUMBER	TARE WEIGHT	CONTAINER NUMBER	TARE WEIGHT
1		39		77	
2		40		78	
3		41		79	
4		42		80	
5		43		81	
6		44		82	
7		45		83	
8		46		84	
9		47		85	
10		48		86	
11		49		87	
12		50		88	
13		51		89	
14		52		90	
15		53		91	
16		54		92	
17		55		93	
18		56		94	
19		57		95	
20		58		96	
21		59		97	
22		60		98	
23		61		99	
24		62		100	
25		63		101	
26		64		102	
27		65		103	
28		66		104	
29		67		105	
30		68		106	
31		69		107	
32		70		108	
33		71		109	
34		72		110	
35		73		111	
36		74		112	
37		75		113	
38		76		114	

<b>SAMPLE INFORMATION:</b>		# OF CANS:				
FACILITY:	SAMPLE #:					
<b>VEHICLE INFORMATION:</b>		DATE/TIME:	WEATHER:			
HAULER _____	TRUCK # _____	TRUCK TYPE _____	COLLECTION LOCATION _____			
WASTE TYPE	RES	MF	ICI	MIX	BULKY/UNUSUAL ITEMS	SEGMENT
<b>SORT DATA</b>						
<b>PAPER</b>		<b>GROSS WEIGHTS</b>	<b>CONTAINER #</b>	<b>COMMENTS</b>		
1 Newsprint (ONP)						
2 High grade office paper						
3 Magazines/catalogs						
4 Uncoated OCC - recyclable						
5 Coated OCC						
6 Boxboard						
7 Cartons - gable top/aseptic						
8 Mixed paper - recyclable						
9 Compostable paper						
10 Other paper						
<b>PLASTIC</b>		<b>GROSS WEIGHTS</b>	<b>CONTAINER #</b>	<b>COMMENTS</b>		
11 PET (#1) bottles/jars						
12 Natural HDPE (#2) bottles/jars						
13 Colored HDPE (#2) bottles/jars						
14 PP (#5) bottles						
15 Other (#3, #4, #6 and #7) bottles						
16 PET (#1) non-bottle rigid containers and packaging						
17 HDPE (#2) non-bottle rigid containers and packaging						
18 PP (#5) non-bottle rigid containers and packaging						
19 PS (#6) non-foam, non-bottle rigid containers and packaging						
20 Other (#7)/unidentifiable non-bottle rigid containers and packaging						
21 Rigid non-packaging						
22 Bulky rigid plastics						
23 PE recyclable film						
24 Agricultural film						
25 Pouches						
26 Other flexible films						
27 PS foam (#6)						
28 Compostable plastics						
29 Other plastics						
<b>METALS</b>		<b>GROSS WEIGHTS</b>	<b>CONTAINER #</b>	<b>COMMENTS</b>		
30 Aluminum beverage containers						
31 Other aluminum						
32 Ferrous ("tin") cans						
33 Other ferrous scrap						
34 Non-ferrous metals						
35 Other metal						
<b>GLASS</b>		<b>GROSS WEIGHTS</b>	<b>CONTAINER #</b>	<b>COMMENTS</b>		
36 Clear containers - beverage						
37 Colored containers - beverage						
38 Glass food containers						
39 Other glass						
<b>ORGANIC MATERIALS</b>		<b>GROSS WEIGHTS</b>	<b>CONTAINER #</b>	<b>COMMENTS</b>		
40 Yard materials - <6"						
41 Yard materials - >6"						
42 Food scraps (not traditionally edible)						
43 Wasted food						
44 Diapers						
45 Animal waste/kitty litter						
46 Bottom fines/dirt						
47 Other organic material						

<b>SORT DATA (continued)</b>				
<b>CONSTRUCTION &amp; DEMOLITION DEBRIS</b>		<b>GROSS WEIGHTS</b>	<b>CONTAINER #</b>	<b>COMMENTS</b>
48	Treated wood			
49	Untreated clean dimensional lumber			
50	Untreated clean engineered wood			
51	Painted/stained wood			
52	Other recyclable wood			
53	Rock, concrete, brick			
54	Gypsum wallboard – demo			
55	Gypsum wallboard – clean scrap			
56	Roofing shingles			
57	PVC			
58	Ceramics/porcelain fixtures			
59	Other C&D			
<b>PROBLEM MATERIALS</b>		<b>GROSS WEIGHTS</b>	<b>CONTAINER #</b>	<b>COUNT</b>
				<b>COMMENTS</b>
60	Televisions – CRT			
61	Televisions – non-CRT			
62	Other banned electronic equipment			
63	Non-banned electronic equipment			
64	Small electrical appliances		N/A	
65	White goods – refrigerated			
66	White goods – non-refrigerated			
67	Lead-acid batteries			
68	Other batteries		Photo	
69	Fluorescent light tubes			
70	Compact fluorescent light bulbs			
71	Tires			
72	Paint		N/A	
73	Automotive used oil/filters			
74	Household hazardous waste			
75	Sharps, needles, lancets		Photo	
76	Other problem materials		Photo	
<b>OTHER WASTE</b>		<b>GROSS WEIGHTS</b>	<b>CONTAINER #</b>	<b>COUNT</b>
				<b>COMMENTS</b>
77	Textiles		N/A	
78	Carpet		N/A	
79	Carpet padding		N/A	
80	Wood pallets		N/A	
81	Bulky items		N/A	
82	Mattresses and box springs			
83	Wood furniture		N/A	
84	Aerosol cans			
85	Compressed gas containers			
<b>END OF SAMPLE FINES</b>		<b>Estimated Percent</b>	<b>Weight/Container #</b>	<b>Comments</b>
Other Paper (10)				
Other Plastic (29)				
Other Glass (39)				
Bottom Fines/dirt (46)				
Food Scraps (42)				
Waste Food (43)				
Other Organics (47)				

**COMMENTS/OBSERVATIONS:**

<b>SAMPLE INFORMATION:</b>		SAMPLE #:		
FACILITY:				
<b>VEHICLE INFORMATION:</b>		DATE/TIME:	WEATHER:	
HAULER _____		TRUCK # _____	TRUCK OR CONTAINER TYPE _____	
<b>TOTAL EST. VOLUME OF WASTE LOAD (yd<sup>3</sup>)</b>				
TAKE PHOTO      YES      NO				
<b>SORT DATA</b> <b>** CONFIRM PERCENTAGES EQUAL 100**</b>				
<b>WASTE COMPONENTS</b>		<b>PERCENT OF MATERIAL (Visual Estimate)</b>	<b>COMMENTS/NOTES ON MATERIAL</b>	
<b>PAPER</b>				
1 Newsprint (ONP)				
2 High grade office paper				
3 Magazines/catalogs				
4 Uncoated OCC - recyclable				
5 Coated OCC				
6 Boxboard				
7 Cartons - gable top/aseptic				
8 Mixed paper - recyclable				
9 Compostable paper				
10 Other paper				
<b>PLASTIC</b>				
11 PET (#1) bottles/jars				
12 Natural HDPE (#2) bottles/jars				
13 Colored HDPE (#2) bottles/jars				
14 PP (#5) bottles				
15 Other (#3, #4, #6 and #7) bottles				
16 PET (#1) non-bottle rigid containers and packaging				
17 HDPE (#2) non-bottle rigid containers and packaging				
18 PP (#5) non-bottle rigid containers and packaging				
19 PS (#6) non-foam, non-bottle rigid containers and packaging				
20 Other (#7)/unidentifiable non-bottle rigid containers and packaging				
21 Rigid non-packaging				
22 Bulky rigid plastics				
23 PE recyclable film				
24 Agricultural film				
25 Pouches				
26 Other flexible films				
27 PS foam (#6)				
28 Compostable plastics				
29 Other plastics				
<b>METALS</b>				
30 Aluminum beverage containers				
31 Other aluminum				
32 Ferrous ("tin") cans				
33 Other ferrous scrap				
34 Non-ferrous metals				
35 Other metal				
<b>GLASS</b>				
36 Clear containers - beverage				
37 Colored containers - beverage				
38 Glass food containers				
39 Other glass				

<b>SORT DATA (continued)</b>		
<b>WASTE COMPONENTS</b>	<b>PERCENT OF MATERIAL (Visual Estimate)</b>	<b>COMMENTS</b>
<b>ORGANIC MATERIALS</b>		
40 Yard materials - <6"		
41 Yard materials - >6"		
42 Food scraps (not traditionally edible)		
43 Wasted food		
44 Diapers		
45 Animal waste/kitty litter		
46 Bottom fines/dirt		
47 Other organic material		
<b>CONSTRUCTION &amp; DEMOLITION DEBRIS</b>		
48 Treated wood		
49 Untreated clean dimensional lumber		
50 Untreated clean engineered wood		
51 Painted/stained wood		
52 Other recyclable wood		
53 Rock, concrete, brick		
54 Gypsum wallboard - demo		
55 Gypsum wallboard - clean scrap		
56 Roofing shingles		
57 PVC		
58 Ceramics/porcelain fixtures		
59 Other C&D		
<b>PROBLEM MATERIALS</b>		
60 Televisions - CRT		
61 Televisions - non-CRT		
62 Other banned electronic equipment		
63 Non-banned electronic equipment		
64 Small electrical appliances		
65 White goods - refrigerated		
66 White goods - non-refrigerated		
67 Lead-acid batteries		
68 Other batteries		
69 Fluorescent light tubes		
70 Compact fluorescent light bulbs		
71 Tires		
72 Paint		
73 Automotive used oil/filters		
74 Household hazardous waste		
75 Sharps, needles, lancets		
76 Other problem materials		
<b>OTHER WASTE</b>		
77 Textiles		
78 Carpet		
79 Carpet padding		
80 Wood pallets		
81 Bulky items		
82 Mattresses and box springs (COUNT)		
83 Wood furniture		
84 Aerosol cans (COUNT)		
85 Compressed gas containers (COUNT)		

**COMMENTS/OBSERVATIONS ON REUSE (i.e. types and numbers of items that are reusable):**

FACILITY:

# OF RESIDENTIAL SAMPLES:

# OF ICI SAMPLES:

# OF TRANSFER TRAILER SAMPLES:

RESIDENTIAL			
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

ICI			
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

TRANSFER TRAILERS			
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

## Appendix D

### Volume to Weight Conversion Factor Source Document

Material Categories and Components		Volume to Weight Conversion Factor (lbs/CY)	Source	Source Category and Description
Paper	Newsprint (ONP)	580	EPA (2016)	Newsprint - loose
	High Grade Office Paper	420	EPA (2016)	Computer Paper - loose
	Magazines/Catalogs	428	EPA (2016)	Books - paperback, loose
	Uncoated OCC - Recyclable	106	EPA (2016)	OCC - flattened
	Coated OCC	106	EPA (2016)	OCC - flattened
	Boxboard	106	EPA (2016)	OCC - flattened
	Cartons - Aseptic/Gable Top Containers	50	EPA (2016)	Cartons - uncrushed
	Mixed Paper - Recyclable	272	EPA (2016)	Mixed - loose
	Compostable Paper	-	N/A	N/A
	Other Paper	259	N/A	Category average
Plastic	PET (#1) Bottles	40	EPA (2016)	Mixed Bottles/Containers #1-#7
	Natural HDPE (#2) Bottles	40	EPA (2016)	Mixed Bottles/Containers #1-#7
	Colored HDPE (#2) Bottles	40	EPA (2016)	Mixed Bottles/Containers #1-#7
	PP (#5) Bottles	40	EPA (2016)	Mixed Bottles/Containers #1-#7
	Other (#3, #4, #6, and #7) Bottles	40	EPA (2016)	Mixed Bottles/Containers #1-#7
	PET(#1) Non-Bottle Rigid Containers & Packaging	40	EPA (2016)	Mixed Bottles/Containers #1-#7
	HDPE (#2) Non-Bottle Rigid Containers & Packaging	40	EPA (2016)	Mixed Bottles/Containers #1-#7
	PP(#5) Non-Bottle Rigid Containers & Packaging	40	EPA (2016)	Mixed Bottles/Containers #1-#7
	PS(#6) Non-Foam, Bottle Rigid Containers & Packaging	40	EPA (2016)	Mixed Bottles/Containers #1-#7
	Packaging	40	EPA (2016)	Mixed Bottles/Containers #1-#7
	Rigid Non-Packaging	80	N/A	Engineer's estimate
	Bulky Rigid Plastics	80	N/A	Engineer's estimate
	PE Recyclable Film	35	EPA (2016)	Film LDPE - loose
	Agricultural Film	40	N/A	Engineer's estimate
	Pouches	40	N/A	Engineer's estimate
	Other Flexible Films	35	EPA (2016)	Film LDPE - loose
Metal	PS Foam (#6)	32	EPA (2016)	Expanded Polystyrene
	Compostable Plastics	-	N/A	N/A
	Other Plastics	44	N/A	Category average
	Aluminum Beverage Containers	46	EPA (2016)	Aluminum cans - uncompacted
	Other Aluminum	46	EPA (2016)	Aluminum cans - uncompacted
Glass	Ferrous ("Tin") Cans	113	EPA (2016)	Steel cans - whole
	Other Ferrous Scrap	225	EPA (2016)	Other Ferrous
	Non-Ferrous Metals	225	EPA (2016)	Other Non-Ferrous
	Other Metal	131	N/A	Category average
Organic Materials	Clear Containers - Beverage	380	EPA (2016)	Glass - Bottles, loose
	Colored Containers - Beverage	380	EPA (2016)	Glass - Bottles, loose
	Glass Food Containers	380	EPA (2016)	Glass - Bottles, loose
	Other Glass	380	N/A	Category average
Construction and Demolition Debris	Yard Materials - <6"	390	EPA (2016)	Yard Trimmings - Leaves; Yard Trimmings - Leaves (Minnesota); Mixed Yard Waste - Prunings & Trimmings
	Yard Materials - >6"	189	EPA (2016)	Mixed Yard Waste - uncompacted; Mixed Yard Waste - Branches & Stumps
	Food Scraps (Not Traditionally Edible)	430	EPA (2016)	Food Waste; Food Waste - restaurants
	Wasted Food	430	EPA (2016)	Food Waste; Food Waste - restaurants
	Diapers	-	N/A	N/A
	Animal Waste/Kitty Litter	-	N/A	N/A
	Bottom Fries/Dir	929	EPA (2016)	Dirt and sand
	Other Organic Material	473	N/A	Category average
Problem Materials	Treated Wood	169	EPA (2016)	Treated Wood
	Untreated Clean Dimensional Lumber	169	EPA (2016)	Clean Dimensional Lumber
	Untreated Clean Engineered Wood	268	EPA (2016)	Clean Engineered Wood
	Painted/Stained Wood	169	EPA (2016)	Painted/Stained Wood
	Other Recyclable Wood	169	EPA (2016)	Other Recyclable Wood
	Rock, Concrete, Brick	930	EPA (2016)	Concrete; Aggregate - Large Rock; Aggregate - Small Rock/Gravel
	Gypsum Wallboard - Demo	467	EPA (2016)	Painted/Demolition Gypsum
	Gypsum Wallboard - Clean Scrap	467	EPA (2016)	Clean Gypsum Board
	Roofing Shingles	731	EPA (2016)	Roofing
	PVC	996	Midco	Engineer's estimate (using 1 inch diam. PVC pipe = 34 lb/100 ft)
	Ceramics/Porcelain Fixtures	930	N/A	Engineer's estimate (used Rock, Concrete, Brick value since most similar)
	Other C&D	497	N/A	Category average
	Televisions - CRT	568	EPA (2016)	CRT <= 19 inch; CRT >= 19 inch; (converted lb/TV to lb/CY using engineer's estimate of dimensions)
	Televisions - Non-CRT	284	EPA (2016)	Flat Panel (converted lb/TV to lb/CY using engineer's estimate of dimensions)
	Other Banned Electronic Equipment	354	EPA (2016)	Computer-related Electronics
	Non-Banned Electronic Equipment	354	EPA (2016)	Computer-related Electronics
	Small Electrical Appliances	438	EPA (2016)	Other Small Consumer Electronics
	White Goods - Refrigerated	397	EPA (2016)	Refrigerator (converted lb/unit to lb/CY using engineer's estimate of dimensions)
	White Goods - Non-Refrigerated	417	EPA (2016)	Major Appliances - Dishwasher; Clothes Dryer (converted lb/unit to lb/CY using engineer's estimate of dimensions)
	Lead Acid Batteries	42	EPA (2016)	Lead-Acid Battery - Auto; Lead-Acid Battery - Truck
	Other Batteries	-	N/A	N/A
	Fluorescent Light Tubes	-	N/A	N/A
	Compact Fluorescent Light Bulbs	-	N/A	N/A
	Tires	770	EPA (2016)	Scrap Tire - Light Duty; Scrap Tire - Commercial; (converted lb/unit to lb/CY using engineer's estimate of dimensions)

Paint	2020	<a href="#">Paint Center</a>	Household Latex Paint
Automotive Used Oil/Filters	1252	EPA (2016)	Fluids - Used Motor Oil; Other Automotive - Oil Filters
Household Hazardous Waste	-	N/A	N/A
Sharps, Needles, Lancets	-	N/A	N/A
Other Problem Materials	627	N/A	Category average
<b>Other Waste</b>	Textiles	150	Mixed Textiles - loose
	Carpet	147	Carpet
	Carpet Padding	62	Carpet Padding
	Wood Pallets	169	Pallets and Crates
	Bulky Items	484	Construction & Demolition Bulk
	Mattresses and Box Springs	108	<a href="#">US Mattress</a> Medium Density Foam (4 lb/CF)
	Wood Furniture	268	Clean Engineered Wood
	Aerosol Cans	25	Engineer's estimate
	Compressed Gas Containers	50	Engineer's estimate

**NOTES:**

1. Loose, unbaled, or uncompacted values used for all categories

2. If range of values or multiple values given for the same category the mean value was used, i.e., for 'Newsprint' a range of 360-800 is given and therefore a value of 580 lbs/CY used.

3. 'Other' categories determined by averaging the factor for all values within the category

**Volume-to-Weight Conversion Factors**  
**U.S. Environmental Protection Agency**  
**Office of Resource Conservation and Recovery**  
**April 2016**

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EPA's 1997 report, "Measuring Recycling: A Guide for State and Local Governments", was a guide to facilitate standardization of MSW data collection at the local level, which included volume-to-weight conversion factors for comparing recovery efforts between municipalities, regions and states. The factors are also valuable when planners work with the national recovery data presented in EPA's sustainable materials management report series.

This document provides updates to the volume-to-weight conversion factors found in the 1997 report Appendix B.

The goal of this update is to identify more current secondary data measurements of the various products. Of particular interest are products known to have been source reduced through light weighting since the early nineties such as plastic, glass and metal packaging. Some factors included on the original table are excluded from the revised table due to lack of updated data. Primary data collection was not performed.

The original Appendix B table included 12 materials categories; the updated table provides factors for 15 material categories, including the following.

- Appliances
- Automotive
- Carpeting
- Commingled Recyclables
- Electronics
- Food
- Glass
- Metals
- Municipal Solid Waste
- Paper
- Plastic
- Textiles
- Wood
- Yard Trimmings
- Construction & Demolition Debris (C&D)

All of the categories include multiple products and/or density measurements. Four product categories—carpeting, commingled recyclable material, electronics and construction and demolition debris—are new. Previously lead-acid batteries and scrap tires were separate categories but are combined into the single category "Automotive" in the updated table.

Other differences include the removal/addition of products within some of the categories to better reflect the current recycling industry. For example, eliminating "Tab Card" and adding "Mixed Paper" to the paper category reflects the move toward commingled recyclables collection. The addition of "Electronics" reflects the growth in these products since the original table was published.

The updated factors are shown in the table below.

### Standard Volume-to-Weight Conversion Factors

Category	Recyclable Materials	Volume	Estimated Weight (lbs)	Source
Appliances	Major Appliances			
	Dishwasher	1 unit	125	1
	Clothes Dryer	1 unit	125	1
	Stove	1 unit	150	1
	Refrigerator	1 unit	250	1
	Clothes Washer	1 unit	150	1
Automotive	Lead-Acid Battery			
	Auto	one	36	3
	Truck	one	47	3
	Scrap Tire			
	Light Duty Tires (passenger, light truck)	one	22.5	5
	Commercial Tires	one	120	5
	Fluids			
	Used Motor Oil	gallon	7.4	2
	Antifreeze	gallon	8.42	2
	Other Automotive			
	Oil Filters not crushed	drum	175	1
	Oil Filters crushed	drum	700	1
	Oil Filters	gallon	5	1
Carpeting	Carpet			
	Carpet	cubic yard	147	6
	Carpet Padding	cubic yard	62	6
Commingled Recyclable Material	Containers (Plastic bottles, Aluminum cans, Steel cans, Glass bottles) and Paper			
	Commingled Recyclables	cubic yard	262	4
	Containers (Plastic bottles, Aluminum cans, Steel cans, Glass bottles), Corrugated Containers and Paper			
	Campus Recyclables	cubic yard	92	7
	Commingled Recyclables	cubic yard	111	4
	Containers (Plastic bottles, Aluminum cans, Steel cans, Glass bottles) – No paper			
	Campus Recyclables	cubic yard	70	7
	Commingled Recyclables	cubic yard	67	4
	Commercial Recyclables	cubic yard	113	8
	Containers (Cans, Plastic) - No glass			
	Campus Recyclables	cubic yard	32	7
	Containers (Cans, Plastic) and Paper - No glass			
	Residential Recyclables	cubic yard	260	2
	Containers (Food/beverage, Glass) Corrugated Containers and Paper			
	Commercial Recyclables	cubic yard	88	2
	Commercial Recyclables	cubic yard	58	21
	Multifamily Recyclables	cubic yard	96	2
	Multifamily Recyclables	cubic yard	51	21

Category	Recyclable Materials	Volume	Estimated Weight (lbs)	Source
Commingled Recyclable Material	<i>Single family Recyclables</i>	cubic yard	126	2
	Containers (Food/beverage, Glass) Corrugated Containers and Paper- No glass			
	<i>Campus Recyclables</i>	cubic yard	139	2
	<i>Commercial Recyclables</i>	cubic yard	155	2
Electronics	Computer Equipment			
	<i>Desktop</i>	one	27	24
	<i>Laptop</i>	one	9.8	24
	Monitor			
	<i>CRT</i>	one	40	1
	<i>15"</i>	one	30	2
	<i>17"</i>	one	45	2
	<i>21"</i>	one	60	2
	<i>Flat Panel</i>	one	24	1
	<i>Mixed Monitors</i>	one	29.4	24
	Televisions			
	<i>CRT &lt; 19 inch</i>	one	41	1
	<i>CRT ≥ 19 inch</i>	one	73	1
	<i>Flat Panel</i>	one	29	1
	<i>Mixed TVs</i>	one	67.3	24
	Peripheral Devices			
	<i>Printers</i>	one	16.1	24
	<i>Mice</i>	one	0.2	9
	<i>Keyboards</i>	one	2.9	9
	Mobile Devices			
	<i>Cellular Phone</i>	one	0.22	9
	Mixed Electronics			
	<i>Brown Goods</i>	cubic yard	343	6
	<i>Computer-related Electronics</i>	cubic yard	354	6
	<i>Other Small Consumer Electronics</i>	cubic yard	438	6
Food				
	Fats, Oils, Grease	55-gallon	412	2
	Organics - commercial	cubic yard	135	21
	Source Separated Organics - commercial	cubic yard	1,000	15
	Food Waste - restaurants	cubic yard	396	21
	Food Waste	cubic yard	463	4
	Food Waste	cubic foot	22-45	4
	Food waste - university	gallon	3.8	22
	Food Waste	64 gallon toter	150	4
	Food waste	2 cubic yard full towable	2,736	4
Glass	Bottles			
	<i>Loose</i>	cubic yard	380	4

Category	Recyclable Materials	Volume	Estimated Weight (lbs)	Source
Metals	Aluminum Cans			
	<i>Uncompacted</i>	cubic yard	46	4
	<i>Uncompacted</i>	case = 24 cans	0.7	11
	<i>Baled</i>	cubic yard	250-500	10
	Steel Cans			
	<i>Whole</i>	cubic yard	50-175	10
	<i>Baled</i>	cubic yard	700-1,000	10
	Steel Cans - Institution			
	<i>Whole</i>	can	0.09	7
	<i>Whole</i>	cubic yard	136	7
Paper	Newsprint			
	<i>Loose</i>	cubic yard	360-800	1
	<i>Baled</i>	cubic yard	750-1,000	10
	Books - paperback, loose	cubic yard	428	23
	Old Corrugated Containers			
	<i>Flattened</i>	cubic yard	106	4
	<i>Baled</i>	cubic yard	700-1,100	10
	Old Corrugated Containers and Chip Board			
	<i>Uncompacted</i>	cubic yard	74.54	4
	Office Paper			
	<i>Computer Paper</i>			
	<i>Loose</i>	cubic yard	375-465	1
	<i>Compacted/Baled</i>	cubic yard	755-925	1
	<i>Mixed</i>			
	<i>Loose</i>	cubic yard	110-380	1
	<i>Loose</i>	cubic yard	323	4
	<i>Compacted</i>	cubic yard	610-755	1
	<i>Shredded</i>	cubic yard	128	4
	<i>Mixed Baled</i>	cubic yard	1,000-1,200	10
	Miscellaneous			
	<i>Cartons (milk and juice) uncrushed</i>	cubic yard	50	7
Plastic	PET			
	<i>PET Bottles - baled</i>	30"x42"x 48"	525-630	12
	<i>PET Thermoform - baled</i>	30"x42"x 48"	525-595	12
	HDPE			
	<i>HDPE Dairy - baled</i>	30"x42"x 48"	525-700	12
	<i>HDPE Mixed - baled</i>	30"x42"x 48"	525-700	12
	Mixed PET and HDPE			
	<i>Loose</i>	cubic yard	32	7
	Mixed Bottles/Containers #1 - #7			
	<i>Loose</i>	cubic yard	40.4	4
	Mixed Bottles/Containers #3 - #7			

Category	Recyclable Materials	Volume	Estimated Weight (lbs)	Source
Plastic	<i>Loose</i>	cubic yard	25.7	4
	Film			
	<i>LDPE, loose</i>	cubic yard	35	13
	<i>LDPE, compacted</i>	cubic yard	150	13
	<i>LDPE, baled</i>	30" x 42" x 48"	1,100	13
	Miscellaneous			
	<i>Trash Bags</i>	cubic yard	35	6
	<i>Grocery/Merchandise Bags</i>	cubic yard	35	6
	<i>Expanded Polystyrene Packaging/Insulation</i>	cubic yard	32	6
Textiles	Mixed Textiles			
	<i>Loose</i>	cubic yard	125-175	10
	<i>Baled</i>	cubic yard	600-750	10
Wood	Wood			
	<i>Wood Chips, green</i>	cubic yard	473	1
	<i>Wood Chips, dry</i>	cubic yard	243	1
	<i>Saw Dust, wet</i>	cubic yard	530	1
	<i>Saw Dust, dry</i>	cubic yard	275	1
	<i>Pallets</i>	one	25	1
	<i>Pallets and Crates</i>	cubic yard	169	18
	<i>Christmas Trees, loose</i>	cubic yard	30	1
Yard Trimmings	Yard Trimmings			
	Leaves	cubic yard	250-500	1
	<i>Leaves (Minnesota)</i>	cubic yard	300 - 383	15
	Mixed Yard Waste			
	<i>Uncompacted</i>	cubic yard	250	1
	<i>Compacted</i>	cubic yard	640	1
	Prunings & Trimmings	cubic yard	127	6
	Branches & Stumps	cubic yard	127	6
Municipal Solid Waste	MSW - Commercial			
	Commercial - dry waste	cubic yard	56-73	16, 8
	Commercial - all waste, uncompactd	cubic yard	138	21
	Mixed MSW - Residential, Institutional, Commercial			
	<i>Uncompacted</i>	cubic yard	250-300	14
	<i>Compacted</i>	cubic yard	400-700	14
	Mixed MSW - Multifamily uncompactd	cubic yard	95	21
	MSW - Landfill			
	<i>Compacted - MSW Small Landfill with Best Management Practices</i>	cubic yard	1,200-1,700	17
	<i>Compacted - MSW Large Landfill with Best Management Practices</i>	cubic yard	1,700-2,000	17

Category	Recyclable Materials	Volume	Estimated Weight (lbs)	Source
Municipal Solid Waste	<i>Compacted - MSW Very Large Landfill with Best Management and Cover Practices, Combined MMSW/Industrial/and other solid waste, or/and Leachate Recirculation</i>	cubic yard	>2,000	17
C &D	Concrete			
	<i>Large Concrete with Re-bar</i>	cubic yard	860	18
	<i>Large Concrete without Re-bar</i>	cubic yard	860	18
	<i>Small Concrete with Re-bar</i>	cubic yard	860	18
	<i>Small Concrete without Re-bar</i>	cubic yard	860	18
	Asphalt Paving			
	<i>Large Asphalt Paving with Re-bar</i>	cubic yard	773	19
	<i>Large Asphalt Paving without Re-bar</i>	cubic yard	773	19
	<i>Small Asphalt Paving with Re-bar</i>	cubic yard	773	19
	<i>Small Asphalt Paving without Re-Bar</i>	cubic yard	773	19
	Roofing			
	<i>Composition Roofing</i>	cubic yard	731	18
	<i>Other Asphalt Roofing</i>	cubic yard	731	18
	Other Aggregates	cubic yard	860	18
	Wood			
	<i>Clean Dimensional Lumber</i>	cubic yard	169	18
	<i>Clean Engineered Wood</i>	cubic yard	268	18
	<i>Other Recyclable Wood</i>	cubic yard	169	18
	<i>Painted/Stained Wood</i>	cubic yard	169	18
	<i>Treated Wood</i>	cubic yard	169	18
	Gypsum Board			
	<i>Clean Gypsum Board</i>	cubic yard	467	18
	<i>Painted/Demolition Gypsum</i>	cubic yard	467	18
	Aggregate			
	<i>Large Rock</i>	cubic yard	999	18
	<i>Small Rock/Gravel</i>	cubic yard	999	18
	Dirt and Sand	cubic yard	929	18
	Remainder/Composite Construction and Demolition	cubic yard	417	18
	Construction & Demolition Bulk	cubic yard	484	20
	Metal			
	<i>Major Appliances</i>	cubic yard	145	18
	<i>Other Ferrous</i>	cubic yard	225	18
	<i>Other Non-Ferrous</i>	cubic yard	225	18
	<i>Remainder/Composite Metal (avg of metals, without used oil filters)</i>	cubic yard	143	18
	<i>HVAC Ducting</i>	cubic yard	47	18

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- 6 California Integrated Waste Management Board. Targeted Statewide Waste Characterization Study: Detailed Characterization of Construction and Demolition Waste. June 2006. <http://www.calrecycle.ca.gov/publications/Documents/Disposal%5C34106007.pdf>
- Brown Goods: larger, non-portable electronic goods that have some circuitry. Examples include microwaves, stereos, VCRs, DVD players, radios, audio/visual equipment, and non-CRT televisions (such as LCD televisions).
- Computer-related Electronics: electronics with large circuitry that is computer-related. Examples include processors, mice, keyboards, laptops, disk drives, printers, modems, and fax machines.
- Other Small Consumer Electronics: portable non-computer-related electronics with large circuitry. Examples include personal digital assistants (PDAs), cell phones, phone systems, phone answering machines, computer games and other electronic toys, portable CD players, camcorders, and digital cameras.
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- 20 Florida Dept of Environmental Protection <http://www.dep.state.fl.us/waste/categories/recycling/cd/canddmain.htm>
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- 21 CalRecycle. 2014 Generator-Based Characterization of Commercial Sector Disposal and Diversion in California. September 10, 2015.  
<http://www.calrecycle.ca.gov/Publications/Documents/1543/20151543.pdf>
- Organics - putrescible material hauled by a contracted third party to a permitted facility mainly engaged in producing compost or mulch, or in anaerobic digestion of organics. Minor mechanical separation of contaminants or recyclable materials may occur at the facility prior to composting or digestion.
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- 22 Goldstein, Nora. "Food Scraps Composting Laboratory". *BioCycle*. January 2013, Vol. 54, No. 1, p. 33.  
<https://www.biocycle.net/2013/01/22/food-scrap-composting-laboratory/>
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Mixed monitors and TVs: total pounds collected divided by total units collected.
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## Appendix E

### Material Category and Component List Acronyms

### **Material Category and Component List of Acronyms**

- CDD – Construction demolition debris
- CRT – Cathode ray tubes
- HDPE – High density polyethylene
- OCC – Old corrugated cardboard
- ONP – Old newspapers
- PE - Polyethylene
- PET – Polyethylene terephthalate
- PP – Polypropylene
- PS - Polystyrene
- PVC – Polyvinyl chloride