Southeastern Public Service Authority
2023 Waste Characterization Study

Southeastern Public Service Authority

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1 BACKGROUND

The Southeastern Public Service Authority (SPSA) contracted with SCS Engineers to conduct a waste characterization study of municipal solid waste (MSW) collected curbside from residences and businesses. This report details the findings of the two week-long field efforts performed at the Chesapeake Transfer Station and the Landstown Transfer Station.

The first part of this report details the methods of material characterization. It also provides guidelines for material definitions that are used throughout the report. The second part of the report presents the results from the two week-long field efforts broken down by residential and commercial waste streams.

CHARACTERIZATION METHOD

Field Efforts

A total of 50 samples were collected from incoming trash trucks at each transfer station. Materials were sampled and sorted at the Chesapeake Transfer Station during the week of June 26th through June 30th and at the Landstown Transfer station during the week of July 10th through July 14th.

Sorting at the Chesapeake Transfer Station

Sampling and Sorting

Samples were distributed by sector (residential routes versus commercial routes) based on the actual tonnage from these sources arriving at the transfer station. Residential trucks are usually side or rear loaders and collect from carts that are placed curbside from single-family homes. Commercial trucks are usually front-loaders that collect dumpsters of varying sizes from businesses. The samples were distributed as follows at each site:

- Chesapeake Transfer Station – 17 commercial samples and 33 residential samples
- Landstown Transfer Station – 13 commercial samples and 36 residential samples

Materials being manually sorted on the table

Trucks at the Landstown Transfer Station run routes throughout the city of Virginia Beach and the Chesapeake Transfer Station services the city of Chesapeake.

As suitable trucks for sampling arrived at the transfer station, a skid steer collected a scoop of MSW from the load on the transfer station floor and transferred it to the sorting area where it was deposited in trash bins. Each sample weighed at least 200 pounds. After sample collection, the sample was transferred to a table and manually sorted into the 32 material categories presented in Table 1. At the completion of sorting, each bin and material category was weighed and the corresponding data was recorded on a field data sheet.

Table 1. Material Categories and Examples

Material		Examples
Paper	Corrugated Cardboard	Shipping or packing boxes
	Recyclable Paper	Newsprint, office paper, boxboard, unwanted mail
	Gable-top and Aseptic Containers	Paper milk and juice cartons and containers
Metals	Aluminum Cans	Soda cans, some aerosol cans
	Steel Cans	Food containers (canned soup, vegetables, etc.), some aerosol cans
	Other Ferrous Metals	Pipes, bolts, metal alloys with iron
	Other Non-Ferrous Metals	Copper wire, brass clasps, aluminum scraps
Organics	Food Waste	Excess food scraps, rotted fruits/vegetables, meat & animal parts
	Yard Waste	Leaves, grass, weeds
	Compostable Paper	Paper towels, napkins, tissues, food-soiled paper, waxed paper
	Untreated Wood	Unpainted, unstained wood such as plywood or particleboard
Inorganic	Glass Bottles & Jars	Beer, wine, and liquor bottles
	Construction Materials	Gypsum board, vinyl siding, concrete, brocks, rocks, window glass, asphalt roofing
	Carpet/Rugs/Padding	Carpet, carpet padding, and rugs
	Electronics	Cell phones, chargers, computers and related equipment, brown goods
Plastics	#1 PET Bottles	Blue, green, or clear bottles (#1): soda bottles, water bottles, hand soap bottles
	#1 PET Thermoforms - Clear	Clear clamshells
	#1 PET Containers - Pigment	PET bottles or thermoforms NOT blue, green, or clear
	#2 HDPE Containers - Natural	Translucent bottles and containers, usually milk jugs or juice
	#2 HDPE Containers - Colored	Opaque white or colored plastic bottles such as cleaning products, laundry detergent bottles
	#3 PVC	Rigid plastic piping, security packaging, blister packaging, vinyl soft packaging (air mattress bag)
	Grocery & Merchandise Bags	Single-use bags used in retail and grocery stores
	Other Film	Chip bags, ziplock bags, trash bags
	#5 Polypropylene	Containers labeled #5, usually yogurt containers
	Other Plastic Containers	Bottles, tubs, and jars (#3, #4, #5, #6, or #7)

Material		Examples
	Expanded Polystyrene	Cups, trays, clamshells, egg cartons, other packaging
	Rigid Plastics	Plastic furniture, bins/crates, buckets; made from a mix of plastics
	Mixed Plastics	Tubs, trays, lids, items labeled #7
Other	Batteries	Lithium ion, car, and household batteries
	HHW	Gasoline, anti-freeze, motor oil, oil-based paint, cleaning products, etc.
	Latex Paint	Spray paint, house paint
	Other	Material that does not fit into above categories

Materials identified in Table 1 above were further classified by divertible category (recyclable, compostable, etc). Table 2 presents the divertible categories and the corresponding materials associated with each.

Table 2. Divertible Categories and Associated Materials

Divertible Category	Materials
Recyclable Fiber	Corrugated Cardboard, Recyclable Paper, Gable-top and Aseptic Containers
Recyclable Plastics	#1 PET Bottles, #1 PET Thermoforms, #1 PET Containers, #2 HDPE Containers (Natural and Pigmented), #5 Polypropylene Containers, Other Plastic Containers/Tubs
Recyclable Metal and Glass	Steel Cans, Aluminum Cans, Other Ferrous, Other Non-Ferrous, Glass Bottles and Jars
Compostable Organics	Food Waste, Yard Waste, Compostable Paper, Untreated Wood
Other Divertibles	Grocery and Merchandise Bags, Electronics, Carpets/Rugs/Padding, Batteries, HHW, Latex Paint
Non-Divertible	Mixed Plastics (#7), Expanded Polystyrene, Rigid Plastics, Other Film, Construction Materials, Other Uncategorized Trash

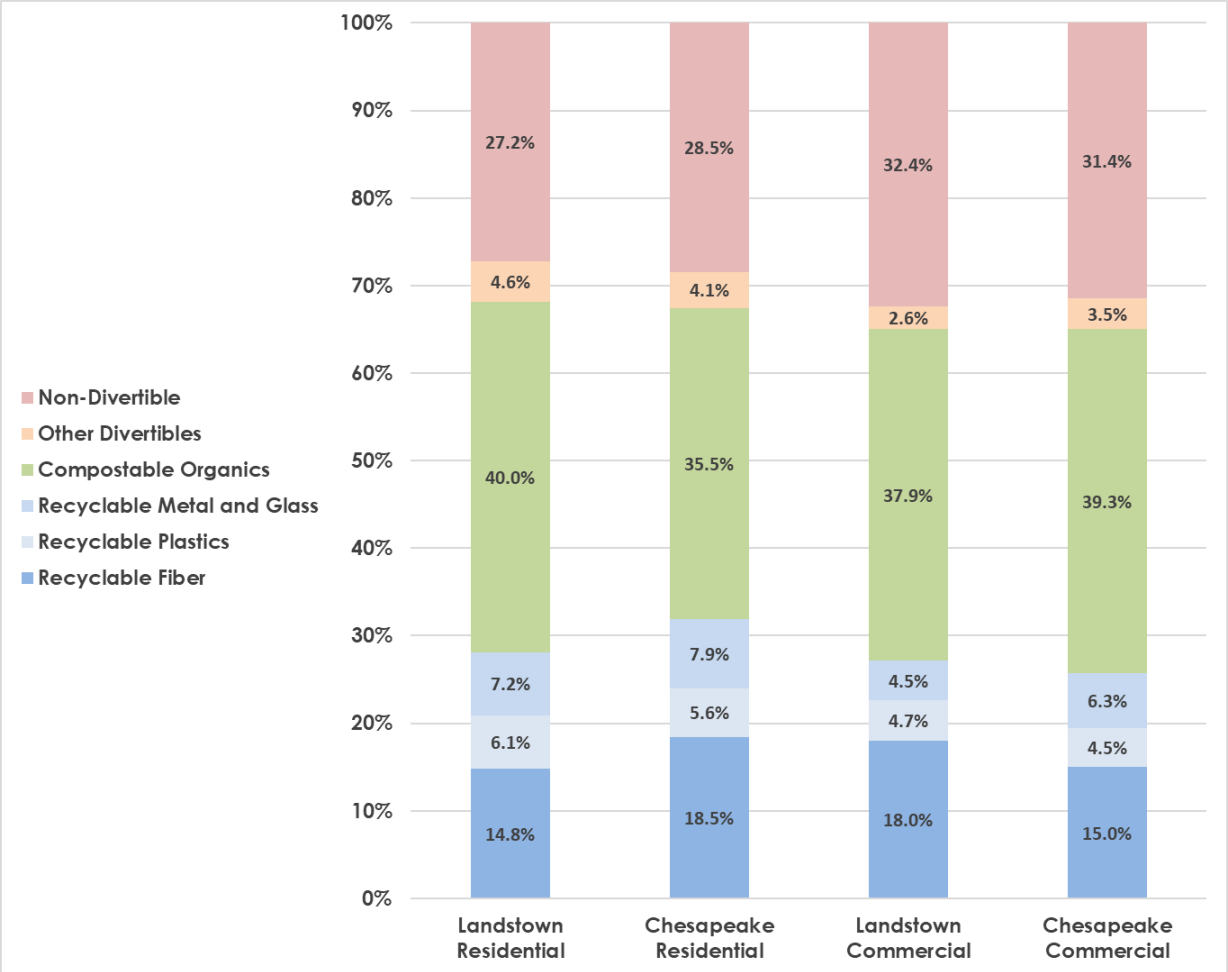
2 RESULTS

This section of the report summarizes the data collected from each transfer station. In order to show the potential for waste diversion, the materials are grouped in the divertible categories presented in Table 2 Please note that the totals may not add up to 100 percent due to rounding.

COMPARISON BY SECTOR AND TRANSFER STATION

Figure 1 presents a comparison of residential and commercial waste compositions for each transfer station. Chesapeake residential routes had the highest proportion of potentially recyclable materials (paper, plastics, metal, and glass) at approximately 32 percent by weight versus approximately 28 percent from Landstown residential routes. Landstown residential routes had the highest proportion of compostable materials at approximately 40 percent by weight.

Figure 1. Waste Stream Comparison by Sector and Transfer Station



LANDSTOWN TRANSFER STATION (VIRGINIA BEACH)

Landstown Overall Waste Stream

Figure 2 and Table 3 present a compilation of the 49 waste samples (36 residential and 13 commercial) collected and sorted during the field effort at Landstown Transfer Station. One residential sample is omitted because it was determined to come from a recycling collection truck that unloaded at the transfer station. The composition includes 95 percent confidence intervals based on the number of samples and variability between the samples. The three largest divertible materials, by weight, of the Landstown Overall waste stream are Food Waste (21.8 percent), Recyclable Paper (11.1 percent), and Compostable Paper (8.3 percent).

Figure 2. Landstown Overall Waste Stream Diversion Potential

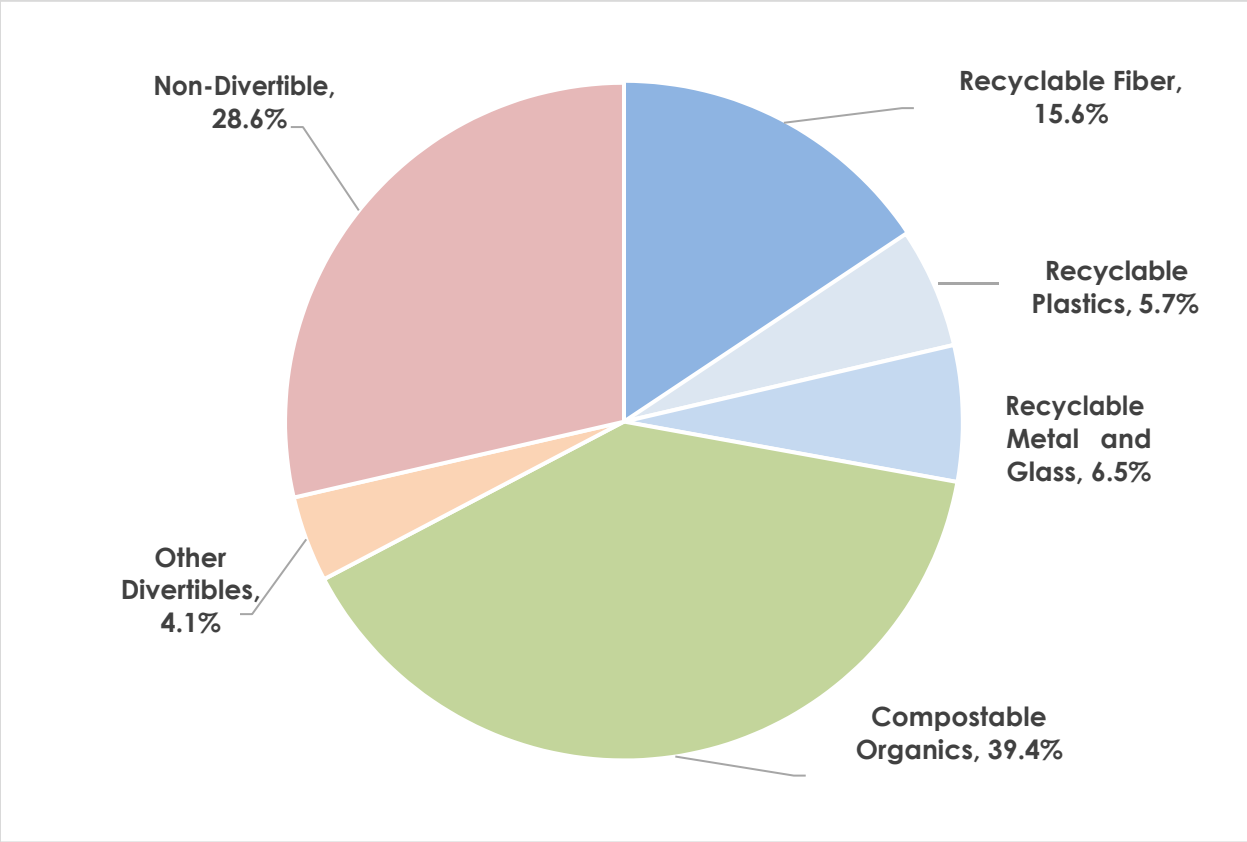


Table 3. Landstown Overall Waste Stream Composition

Material Components	Mean Composition	Standard Deviation	Confidence Limits Lower	Confidence Limits Upper
PAPER				
Corrugated Cardboard	3.3%	2.4%	2.7%	4.0%
Recyclable Paper	11.1%	2.7%	10.3%	11.8%
Gable-top and Aseptic Containers	1.3%	0.6%	1.1%	1.4%
Total Paper	**15.6%**			
PLASTIC				
#1 PET Bottles	1.7%	0.7%	1.5%	1.9%
#1 PET Thermoforms (Clear)	1.1%	0.6%	0.9%	1.3%
#1 PET Containers (Pigmented)	0.5%	0.2%	0.4%	0.6%
#2 HDPE Containers (Natural)	0.5%	0.3%	0.4%	0.6%
#2 HDPE Containers (Colored)	0.6%	0.5%	0.5%	0.7%
Grocery & Merchandise Bags	1.0%	0.4%	0.9%	1.1%
Mixed Plastics (#7)	<0.1%	<0.1%	<0.1%	<0.1%
#5 Polypropylene Containers	0.6%	0.4%	0.5%	0.7%
Other Plastic Containers/Tubs	0.7%	0.4%	0.6%	0.8%
#3 - PVC	<0.1%	<0.1%	<0.1%	<0.1%
Expanded Polystyrene	1.0%	0.4%	0.9%	1.1%
Rigid Plastic	2.3%	1.3%	1.9%	2.6%
Other Film	9.5%	1.8%	9.0%	10.0%
Total Plastic	**19.6%**			
ORGANIC				
Food Waste	21.8%	4.8%	20.5%	23.2%
Yard Waste	7.4%	7.3%	5.3%	9.4%
Compostable Paper	8.3%	1.5%	7.9%	8.8%
Untreated Wood	1.9%	1.9%	1.4%	2.4%
Total Organics	**39.4%**			
METALS				
Steel Cans	0.7%	0.4%	0.5%	0.8%
Aluminum Cans	0.8%	0.4%	0.6%	0.9%
Other Ferrous	1.3%	1.4%	0.9%	1.7%
Other Non-Ferrous	0.6%	0.5%	0.5%	0.8%
Total Metals	**3.4%**			
GLASS				
Glass Bottles and Jars	3.1%	1.7%	2.6%	3.6%
Total Glass	**3.1%**			
INORGANICS				
Construction Materials	2.5%	3.6%	1.5%	3.6%
Electronics	2.0%	1.7%	1.5%	2.5%
Carpets/Rugs/Padding	0.9%	3.2%	<0.1%	1.8%
Total Inorganics	**5.5%**			
OTHER / UNCATEGORIZED				
Batteries	<0.1%	<0.1%	<0.1%	<0.1%
HHW	<0.1%	0.2%	<0.1%	0.1%
Latex Paint	0.1%	0.4%	<0.1%	0.2%
Other Uncategorized Trash	13.1%	4.0%	12.0%	14.3%
Total Other Wastes	**13.3%**			
TOTALS	**99.9%**			

Notes: Composition based on 49 samples

Confidence limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Landstown Residential Waste Stream

Figure 3 and Table 4 present a compilation of the 36 residential waste samples collected and sorted during the field effort at Landstown Transfer Station. One residential sample is omitted from the analysis because it was determined to come from a recycling collection truck that unloaded at the transfer station. The composition includes 95 percent confidence intervals based on the number of samples and variability between the samples. The three largest divertible materials, by weight, of the Landstown Residential waste stream are Food Waste (21.4 percent), Recyclable Paper (11.0 percent), and Yard Waste (8.8 percent).

Figure 3. Landstown Residential Waste Stream Diversion Potential

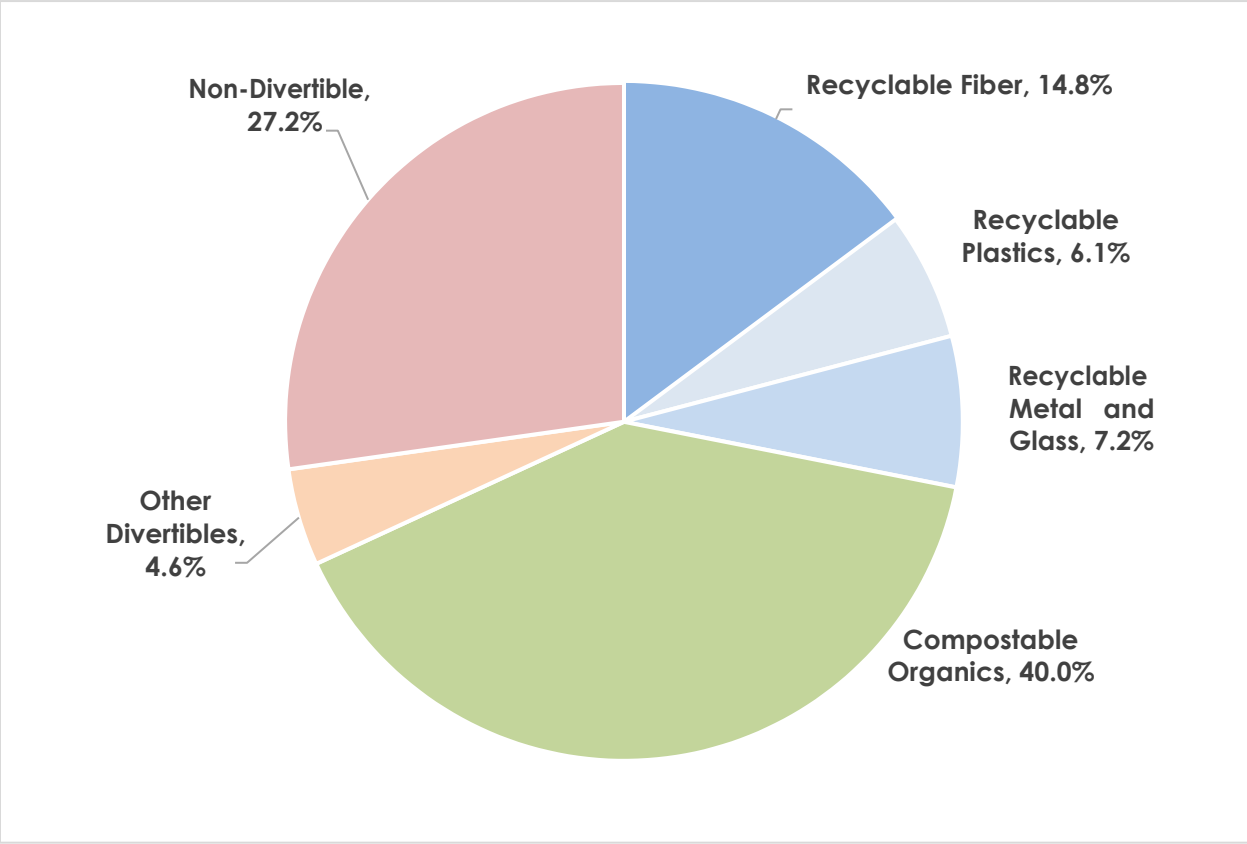


Table 4. Landstown Residential Waste Stream Composition

Material Components	Mean Composition	Standard Deviation	Confidence Limits Lower	Confidence Limits Upper
PAPER				
Corrugated Cardboard	2.6%	1.6%	2.1%	3.1%
Recyclable Paper	11.0%	2.5%	10.2%	11.9%
Gable-top and Aseptic Containers	1.2%	0.3%	1.1%	1.3%
Total Paper	**14.8%**			
PLASTIC				
#1 PET Bottles	1.9%	0.5%	1.7%	2.1%
#1 PET Thermoforms (Clear)	1.2%	0.6%	1.0%	1.4%
#1 PET Containers (Pigmented)	0.5%	0.2%	0.4%	0.6%
#2 HDPE Containers (Natural)	0.4%	0.2%	0.4%	0.5%
#2 HDPE Containers (Colored)	0.7%	0.5%	0.5%	0.9%
Grocery & Merchandise Bags	1.1%	0.4%	1.0%	1.2%
Mixed Plastics (#7)	<0.1%	<0.1%	<0.1%	<0.1%
#5 Polypropylene Containers	0.6%	0.3%	0.5%	0.7%
Other Plastic Containers/Tubs	0.7%	0.3%	0.6%	0.8%
#3 - PVC	<0.1%	<0.1%	<0.1%	<0.1%
Expanded Polystyrene	1.0%	0.3%	0.9%	1.1%
Rigid Plastic	2.3%	1.3%	1.9%	2.7%
Other Film	9.2%	1.6%	8.7%	9.7%
Total Plastic	**19.8%**			
ORGANIC				
Food Waste	21.4%	4.4%	19.9%	22.8%
Yard Waste	8.8%	7.6%	6.3%	11.3%
Compostable Paper	8.2%	1.2%	7.8%	8.6%
Untreated Wood	1.7%	1.5%	1.2%	2.2%
Total Organics	**40.0%**			
METALS				
Steel Cans	0.8%	0.4%	0.7%	0.9%
Aluminum Cans	0.8%	0.4%	0.7%	1.0%
Other Ferrous	1.5%	1.6%	1.0%	2.0%
Other Non-Ferrous	0.8%	0.6%	0.6%	0.9%
Total Metals	**3.9%**			
GLASS				
Glass Bottles and Jars	3.3%	1.6%	2.8%	3.8%
Total Glass	**3.3%**			
INORGANICS				
Construction Materials	1.7%	2.6%	0.9%	2.6%
Electronics	2.2%	1.8%	1.6%	2.7%
Carpets/Rugs/Padding	1.1%	3.6%	<0.1%	2.3%
Total Inorganics	**5.0%**			
OTHER / UNCATEGORIZED				
Batteries	<0.1%	<0.1%	<0.1%	<0.1%
HHW	<0.1%	0.3%	<0.1%	0.1%
Latex Paint	0.1%	0.5%	<0.1%	0.3%
Other Uncategorized Trash	12.9%	4.3%	11.5%	14.3%
Total Other Wastes	**13.1%**			
TOTALS	**100.0%**			

Notes: Composition based on 36 samples

Confidence limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Landstown Commercial Waste Stream

Figure 4 and Table 5 present a compilation of the 13 commercial waste samples collected and sorted during the field effort at Landstown Transfer Station. The composition includes 95 percent confidence intervals based on the number of samples and variability between the samples. The three largest divertible materials, by weight, of the Landstown Commercial waste stream are Food Waste (23.2 percent), Recyclable Paper (11.1 percent), and Compostable Paper (8.7 percent).

Figure 4. Landstown Commercial Waste Stream Diversion Potential

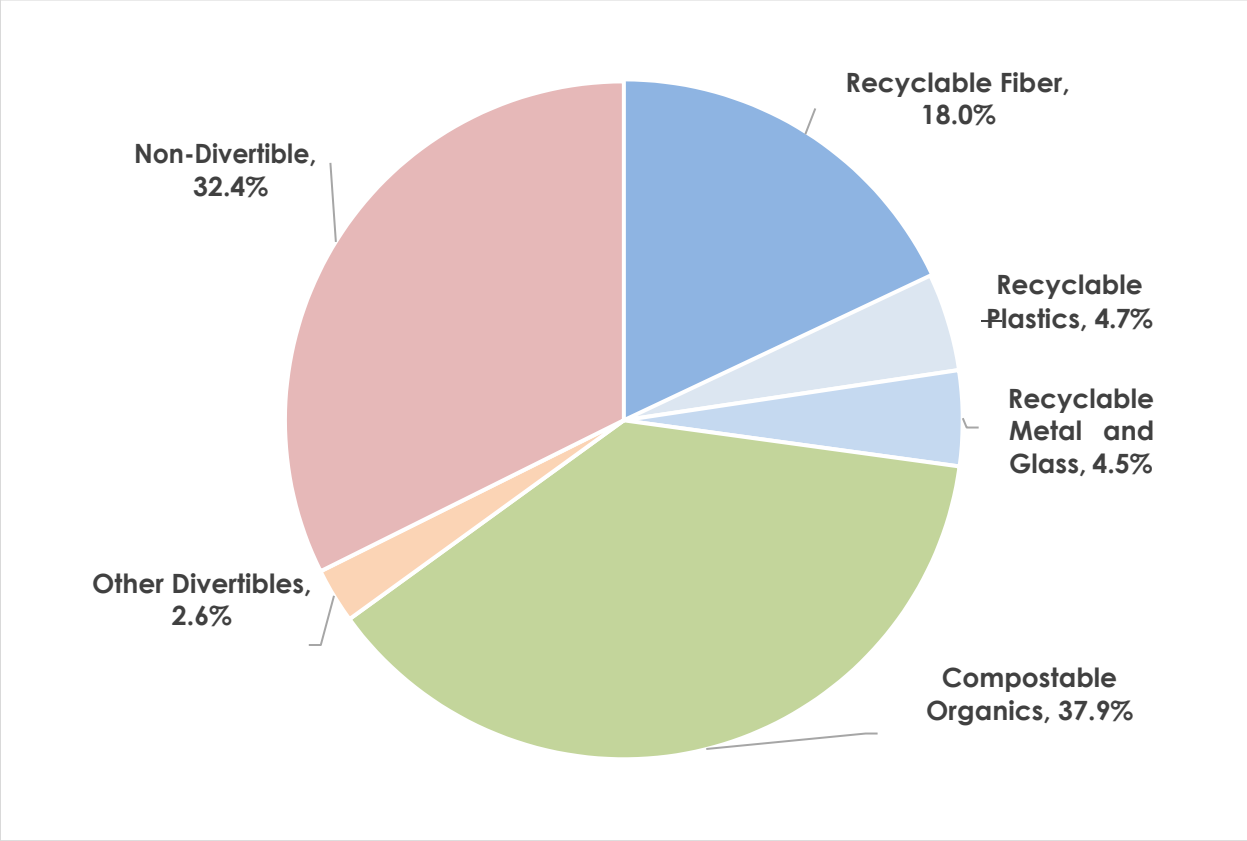


Table 5. Landstown Commercial Waste Stream Composition

Material Components	Mean Composition	Standard Deviation	Confidence Limits Lower	Confidence Limits Upper
PAPER				
Corrugated Cardboard	5.3%	3.0%	3.7%	7.0%
Recyclable Paper	11.1%	3.4%	9.3%	13.0%
Gable-top and Aseptic Containers	1.5%	0.9%	1.0%	2.0%
Total Paper	**18.0%**			
PLASTIC				
#1 PET Bottles	1.1%	0.6%	0.7%	1.4%
#1 PET Thermoforms (Clear)	0.8%	0.5%	0.5%	1.1%
#1 PET Containers (Pigmented)	0.5%	0.2%	0.3%	0.6%
#2 HDPE Containers (Natural)	0.6%	0.4%	0.4%	0.8%
#2 HDPE Containers (Colored)	0.4%	<0.1%	0.3%	0.4%
Grocery & Merchandise Bags	0.6%	0.3%	0.4%	0.8%
Mixed Plastics (#7)	<0.1%	<0.1%	<0.1%	<0.1%
#5 Polypropylene Containers	0.7%	0.5%	0.4%	0.9%
Other Plastic Containers/Tubs	0.7%	0.5%	0.4%	1.0%
#3 - PVC	<0.1%	<0.1%	<0.1%	<0.1%
Expanded Polystyrene	1.0%	0.5%	0.8%	1.3%
Rigid Plastic	2.2%	1.2%	1.6%	2.9%
Other Film	10.4%	1.9%	9.4%	11.5%
Total Plastic	**19.0%**			
ORGANIC				
Food Waste	23.2%	5.7%	20.1%	26.3%
Yard Waste	3.4%	4.3%	1.1%	5.7%
Compostable Paper	8.7%	2.3%	7.5%	9.9%
Untreated Wood	2.6%	2.6%	1.2%	4.0%
Total Organics	**37.9%**			
METALS				
Steel Cans	0.3%	0.2%	0.2%	0.4%
Aluminum Cans	0.5%	0.3%	0.3%	0.7%
Other Ferrous	0.8%	0.6%	0.5%	1.1%
Other Non-Ferrous	0.3%	0.3%	0.2%	0.5%
Total Metals	**2.0%**			
GLASS				
Glass Bottles and Jars	2.6%	1.9%	1.6%	3.6%
Total Glass	**2.6%**			
INORGANICS				
Construction Materials	4.8%	5.0%	2.0%	7.5%
Electronics	1.6%	1.3%	0.9%	2.3%
Carpets/Rugs/Padding	0.3%	1.2%	<0.1%	1.0%
Total Inorganics	**6.7%**			
OTHER / UNCATEGORIZED				
Batteries	<0.1%	<0.1%	<0.1%	0.1%
HHW	<0.1%	<0.1%	<0.1%	<0.1%
Latex Paint	<0.1%	<0.1%	N/A	N/A
Other Uncategorized Trash	13.8%	3.2%	12.1%	15.6%
Total Other Wastes	**13.9%**			
TOTALS	**100.0%**			

Notes: Composition based on 13 samples

Confidence limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

CHESAPEAKE TRANSFER STATION

Chesapeake Overall Waste Stream

Figure 5 and Table 6 present a compilation of the 50 waste samples (33 residential and 17 commercial) collected and sorted during the field effort at the Chesapeake Transfer Station. The composition includes 95 percent confidence intervals based on the number of samples and variability between the samples. The three largest divertible materials, by weight, of the Chesapeake Overall waste stream are Food Waste (20.5 percent), Recyclable Paper (10.6 percent), and Compostable Paper (7.6 percent).

Figure 5. Chesapeake Overall Waste Stream Diversion Potential

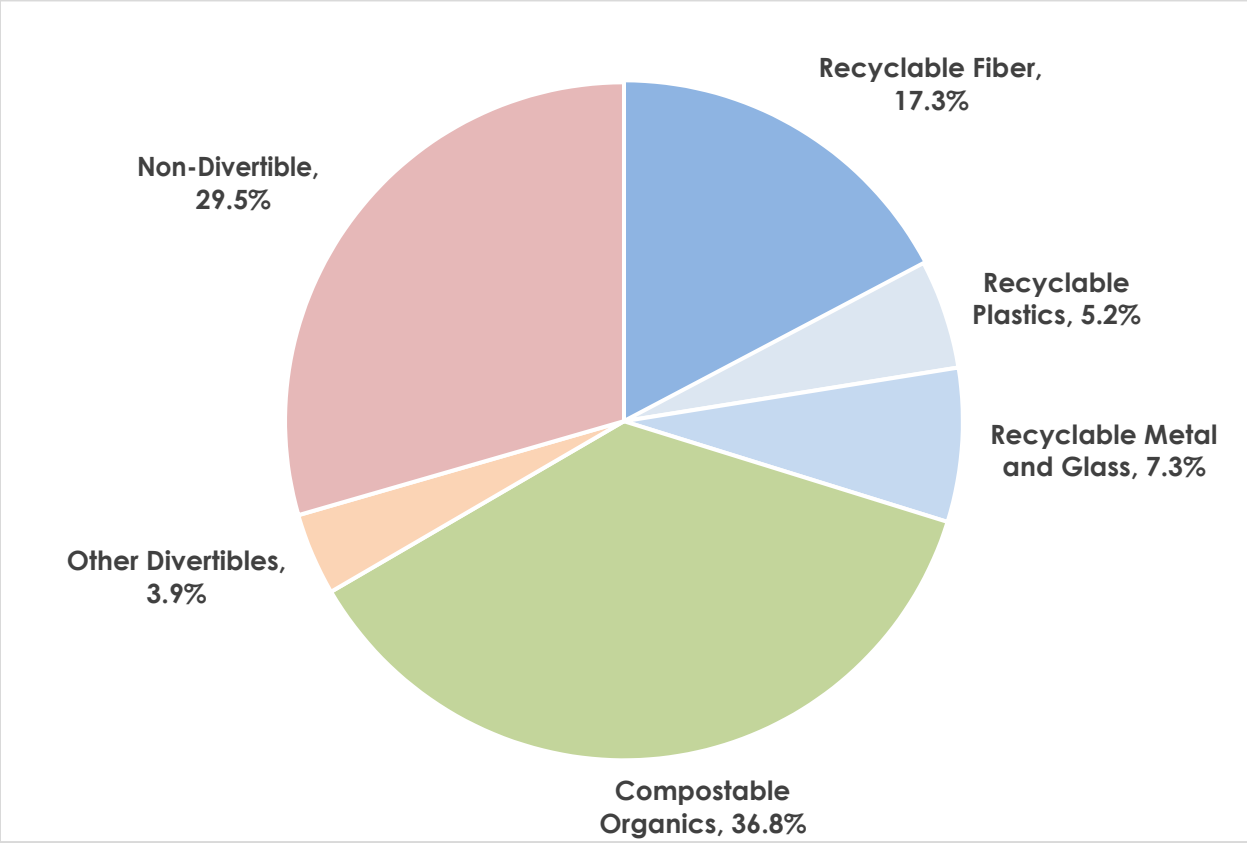


Table 6. Chesapeake Overall Waste Stream Composition

Material Components	Mean Composition	Standard Deviation	Confidence Limits Lower	Confidence Limits Upper
PAPER				
Corrugated Cardboard	5.1%	3.0%	4.2%	5.9%
Recyclable Paper	10.6%	3.6%	9.6%	11.6%
Gable-top and Aseptic Containers	1.6%	0.7%	1.4%	1.8%
Total Paper	**17.3%**			
PLASTIC				
#1 PET Bottles	1.4%	0.7%	1.2%	1.5%
#1 PET Thermoforms (Clear)	1.0%	0.5%	0.8%	1.1%
#1 PET Containers (Pigmented)	0.5%	0.3%	0.4%	0.6%
#2 HDPE Containers (Natural)	0.5%	0.3%	0.4%	0.6%
#2 HDPE Containers (Colored)	0.5%	0.3%	0.4%	0.6%
Grocery & Merchandise Bags	0.9%	0.5%	0.7%	1.0%
Mixed Plastics (#7)	<0.1%	<0.1%	<0.1%	<0.1%
#5 Polypropylene Containers	0.5%	0.4%	0.4%	0.6%
Other Plastic Containers/Tubs	0.9%	0.9%	0.6%	1.1%
#3 - PVC	<0.1%	0.1%	<0.1%	<0.1%
Expanded Polystyrene	0.9%	0.5%	0.8%	1.0%
Rigid Plastic	2.4%	1.1%	2.1%	2.7%
Other Film	8.4%	2.3%	7.7%	9.0%
Total Plastic	**17.8%**			
ORGANIC				
Food Waste	20.5%	5.9%	18.9%	22.1%
Yard Waste	6.0%	6.3%	4.3%	7.8%
Compostable Paper	7.6%	2.1%	7.0%	8.2%
Untreated Wood	2.7%	2.9%	1.9%	3.5%
Total Organics	**36.8%**			
METALS				
Steel Cans	0.6%	0.5%	0.5%	0.8%
Aluminum Cans	0.7%	0.4%	0.5%	0.8%
Other Ferrous	1.6%	1.8%	1.1%	2.1%
Other Non-Ferrous	0.4%	0.3%	0.3%	0.4%
Total Metals	**3.2%**			
GLASS				
Glass Bottles and Jars	4.1%	1.8%	3.6%	4.6%
Total Glass	**4.1%**			
INORGANICS				
Construction Materials	4.2%	4.2%	3.0%	5.3%
Electronics	2.2%	2.2%	1.6%	2.8%
Carpets/Rugs/Padding	0.5%	2.1%	<0.1%	1.1%
Total Inorganics	**6.9%**			
OTHER / UNCATEGORIZED				
Batteries	<0.1%	<0.1%	<0.1%	<0.1%
HHW	<0.1%	0.2%	<0.1%	0.1%
Latex Paint	0.2%	0.6%	<0.1%	0.4%
Other Uncategorized Trash	13.6%	5.1%	12.2%	15.0%
Total Other Wastes	**13.9%**			
TOTALS	**100.0%**			

Notes: Composition based on 50 samples

Confidence limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Chesapeake Residential Waste Stream

Figure 6 and Table 7 present a compilation of the 33 residential waste samples collected and sorted during the field effort at the Chesapeake Transfer Station. The composition includes 95 percent confidence intervals based on the number of samples and variability between the samples. The three largest divertible materials, by weight, of the Chesapeake Residential waste stream are Food Waste (18.7 percent), Recyclable Paper (11.8 percent), and Compostable Paper (7.7 percent).

Figure 6. Chesapeake Residential Waste Stream Diversion Potential

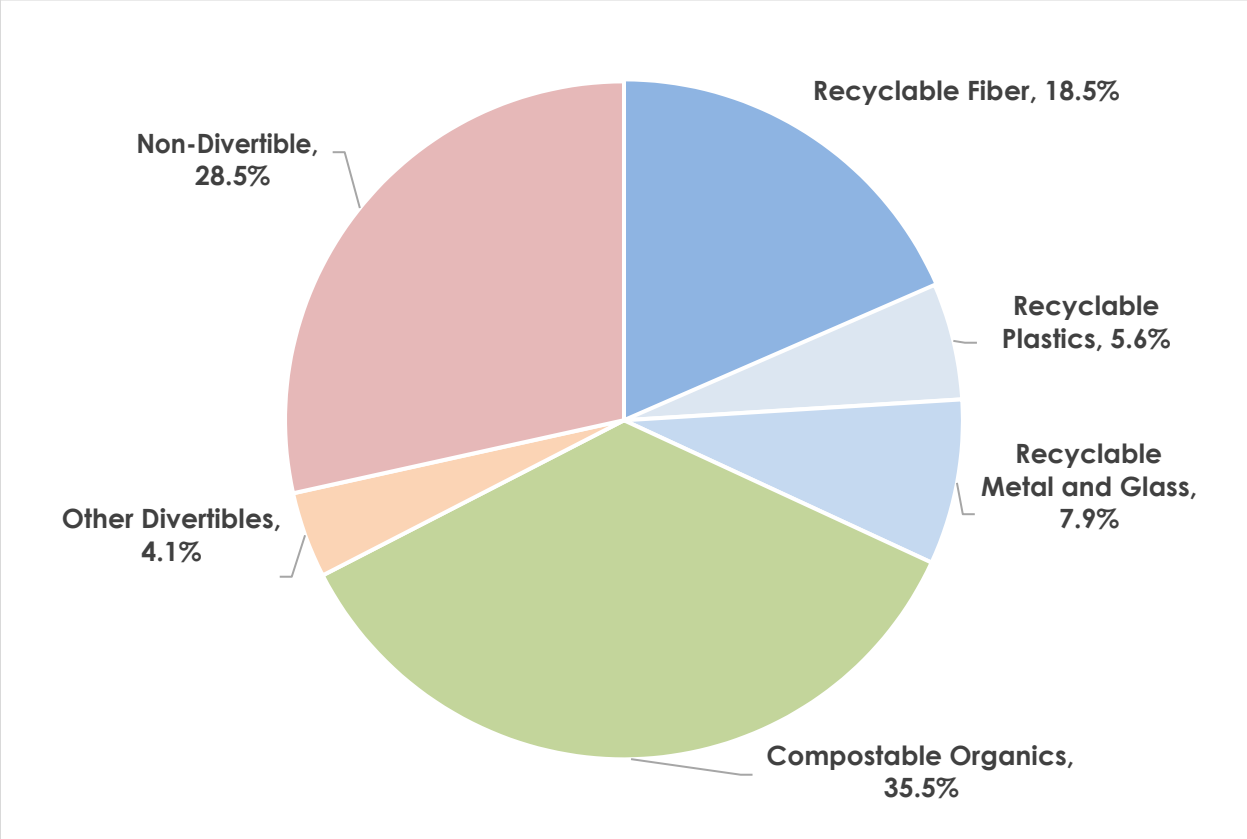


Table 7. Chesapeake Residential Waste Stream Composition

Material Components	Mean Composition	Standard Deviation	Confidence Limits Lower	Confidence Limits Upper
PAPER				
Corrugated Cardboard	5.0%	2.8%	4.1%	6.0%
Recyclable Paper	11.8%	3.0%	10.8%	12.8%
Gable-top and Aseptic Containers	1.6%	0.6%	1.4%	1.8%
Total Paper	**18.5%**			
PLASTIC				
#1 PET Bottles	1.4%	0.7%	1.2%	1.7%
#1 PET Thermoforms (Clear)	1.1%	0.6%	0.8%	1.3%
#1 PET Containers (Pigmented)	0.5%	0.3%	0.4%	0.6%
#2 HDPE Containers (Natural)	0.5%	0.4%	0.4%	0.7%
#2 HDPE Containers (Colored)	0.6%	0.3%	0.5%	0.6%
Grocery & Merchandise Bags	1.0%	0.4%	0.8%	1.1%
Mixed Plastics (#7)	<0.1%	<0.1%	<0.1%	<0.1%
#5 Polypropylene Containers	0.5%	0.3%	0.4%	0.6%
Other Plastic Containers/Tubs	0.9%	0.5%	0.8%	1.1%
#3 - PVC	<0.1%	<0.1%	<0.1%	<0.1%
Expanded Polystyrene	0.9%	0.3%	0.7%	1.0%
Rigid Plastic	2.7%	1.1%	2.3%	3.1%
Other Film	7.7%	1.8%	7.1%	8.3%
Total Plastic	**17.8%**			
ORGANIC				
Food Waste	18.7%	3.4%	17.5%	19.8%
Yard Waste	6.7%	6.0%	4.6%	8.7%
Compostable Paper	7.7%	1.8%	7.1%	8.3%
Untreated Wood	2.5%	1.8%	1.9%	3.2%
Total Organics	**35.5%**			
METALS				
Steel Cans	0.7%	0.4%	0.6%	0.9%
Aluminum Cans	0.7%	0.3%	0.6%	0.8%
Other Ferrous	1.4%	1.1%	1.1%	1.8%
Other Non-Ferrous	0.4%	0.3%	0.3%	0.5%
Total Metals	**3.2%**			
GLASS				
Glass Bottles and Jars	4.7%	1.5%	4.2%	5.2%
Total Glass	**4.7%**			
INORGANICS				
Construction Materials	4.0%	4.8%	2.4%	5.7%
Electronics	2.4%	2.5%	1.6%	3.3%
Carpets/Rugs/Padding	0.4%	2.1%	<0.1%	1.1%
Total Inorganics	**6.8%**			
OTHER / UNCATEGORIZED				
Batteries	<0.1%	<0.1%	<0.1%	<0.1%
HHW	<0.1%	0.2%	<0.1%	0.1%
Latex Paint	0.2%	0.6%	<0.1%	0.5%
Other Uncategorized Trash	13.1%	5.2%	11.3%	14.9%
Total Other Wastes	**13.5%**			
TOTALS	**100.0%**			

Notes: Composition based on 33 samples

Confidence limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

Chesapeake Commercial Waste Stream

Figure 7 and Table 8 present a compilation of the 17 commercial waste samples collected and sorted during the field effort at Chesapeake Transfer Station. The composition includes 95 percent confidence intervals based on the number of samples and variability between the samples. The three largest divertible materials, by weight, of the Chesapeake Commercial waste stream are Food Waste (24.1 percent), Recyclable Paper (8.4 percent), and Compostable Paper (7.5 percent).

Figure 7. Chesapeake Commercial Waste Stream Diversion Potential

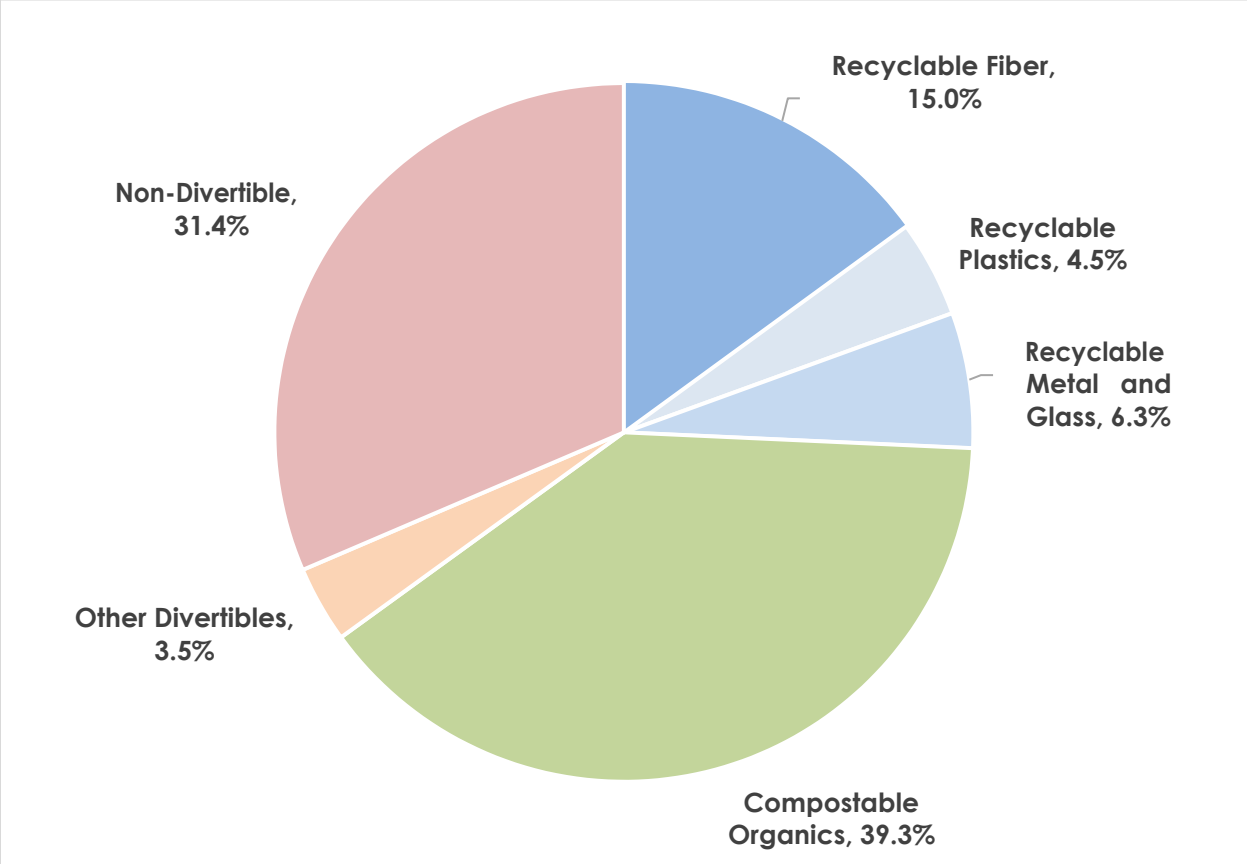


Table 8. Chesapeake Commercial Waste Stream Composition

Material Components	Mean Composition	Standard Deviation	Confidence Limits Lower	Confidence Limits Upper
PAPER				
Corrugated Cardboard	5.1%	3.6%	3.4%	6.8%
Recyclable Paper	8.4%	3.7%	6.6%	10.1%
Gable-top and Aseptic Containers	1.5%	0.9%	1.1%	1.9%
Total Paper	**15.0%**			
PLASTIC				
#1 PET Bottles	1.2%	0.6%	0.9%	1.5%
#1 PET Thermoforms (Clear)	0.8%	0.3%	0.6%	0.9%
#1 PET Containers (Pigmented)	0.5%	0.3%	0.3%	0.6%
#2 HDPE Containers (Natural)	0.4%	0.2%	0.3%	0.6%
#2 HDPE Containers (Colored)	0.4%	0.2%	0.3%	0.5%
Grocery & Merchandise Bags	0.7%	0.6%	0.4%	1.0%
Mixed Plastics (#7)	<0.1%	<0.1%	<0.1%	<0.1%
#5 Polypropylene Containers	0.4%	0.5%	0.1%	0.6%
Other Plastic Containers/Tubs	0.8%	1.4%	0.1%	1.5%
#3 - PVC	<0.1%	0.2%	<0.1%	0.2%
Expanded Polystyrene	1.0%	0.8%	0.6%	1.4%
Rigid Plastic	1.8%	0.9%	1.4%	2.2%
Other Film	9.6%	2.7%	8.4%	10.9%
Total Plastic	**17.7%**			
ORGANIC				
Food Waste	24.1%	7.9%	20.3%	27.8%
Yard Waste	4.8%	6.8%	1.5%	8.0%
Compostable Paper	7.5%	2.7%	6.2%	8.8%
Untreated Wood	3.0%	4.4%	0.9%	5.0%
Total Organics	**39.3%**			
METALS				
Steel Cans	0.5%	0.5%	0.3%	0.8%
Aluminum Cans	0.7%	0.6%	0.4%	0.9%
Other Ferrous	1.8%	2.8%	0.5%	3.1%
Other Non-Ferrous	0.3%	0.3%	0.2%	0.5%
Total Metals	**3.4%**			
GLASS				
Glass Bottles and Jars	2.9%	1.8%	2.0%	3.8%
Total Glass	**2.9%**			
INORGANICS				
Construction Materials	4.4%	2.6%	3.2%	5.7%
Electronics	1.8%	1.5%	1.1%	2.6%
Carpets/Rugs/Padding	0.8%	1.9%	<0.1%	1.8%
Total Inorganics	**7.1%**			
OTHER / UNCATEGORIZED				
Batteries	<0.1%	<0.1%	<0.1%	<0.1%
HHW	<0.1%	<0.1%	<0.1%	<0.1%
Latex Paint	0.1%	0.5%	<0.1%	0.3%
Other Uncategorized Trash	14.5%	5.0%	12.1%	16.9%
Total Other Wastes	**14.7%**			
TOTALS	**100.0%**			

Notes: Composition based on 17 samples

Confidence limits are calculated at the 95% confidence level.

N/A indicates the material was not found while sampling so confidence intervals cannot be calculated.

3 RECOMMENDATIONS FOR INCREASED DIVERSION

Assess Waste Composition Over Multiple Seasons – Continue to conduct waste characterization studies over multiple seasons and at more transfer stations to improve the level of precision and accuracy of the waste composition estimates. The SPSA service area likely has seasonal fluctuations due to high vacation and tourist traffic during the summer, when the fieldwork for this study was completed. Assessing the waste stream during each season allows SPSA to distinguish seasonal trends and diminish the effect of seasonality on the overall composition. Collecting more samples improves the range of confidence intervals for each component.

Visual Characterizations of Bulky Loads - Conduct visual characterization of bulky and C&D loads (including self-haul loads) to identify materials that could be diverted from the waste stream. Including bulky waste and C&D will achieve a more complete analysis of the overall waste stream managed at the transfer stations and may identify new diversion opportunities.

Target Specific Industry Groups from Commercial Sector - Distinguish sources of commercial waste to better understand the non-residential waste stream. Commercial waste has high variability between samples due to the varied business activities (e.g., high quantities of food from restaurants and grocery stores, high quantities of corrugated cardboard from retail and grocery stores, high quantities of paper from offices). Targeting specific business types would allow SPSA to identify more specific diversion opportunities from the commercial sector. Waste characterization studies can be conducted directly at select businesses (rather than at the transfer station) to assess waste composition by industry group.

Encourage Organics Composting and Diversion – Compostable organics make up nearly 40 percent of the waste stream at Landstown Transfer station. This may be partially due to increased numbers of restaurants and other food service establishments in the area. Jurisdictions are increasingly considering curbside collection of organics to divert additional materials from landfill disposal. Restaurants can be also be encouraged to donate food and use compostable packaging for take out.