FINAL REPORT

Pinellas County Department of Solid Waste 2020 County Recyclables Composition Study

PREPARED FOR

Pinellas County
Department of Solid Waste
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St. Petersburg, FL 33716

SUBMITTED BY

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Section 1
Introduction

1.1 Study Objectives

As a task assignment for their 2018 Contract for Solid Waste Consulting Services, Pinellas County (County) requested Kessler Consulting, Inc. (KCI) to conduct a recyclables composition study (RCS) to quantify the composition of the single stream recyclables collected in the County's Beach Park Recycling Location (BPRL) and Collection Center recycling programs. The RCS results will provide valuable information to the County on the types and percentages of acceptable and unacceptable material in their recyclables streams, which will inform their ongoing solid waste and waste reduction efforts.

1.2 Background

The County has a population of approximately 980,000 people and is the sixth most populous county in Florida. The County contains 24 individual municipalities. About 27 percent of residents live within the City of St. Petersburg, 12 percent live within the City of Clearwater, 9 percent live within the City of Largo, 24 percent live within the other 21 municipalities, and the remaining 28 percent live in the unincorporated areas of the County. [1]

Located on Florida's Gulf Coast in the Tampa Bay region, the County has a land area of 274 square miles. The County has the densest population of any county in Florida, with an average density of 3,570 persons per square mile; this is over twice the density of the second densest county and nine times as high as the Florida average. The County primarily has urban and suburban development. It also includes numerous beach communities along the Gulf. Because of this, the County has a high seasonal and tourist population.

Collection of solid waste and recyclables for incorporated areas is managed by the individual municipalities. In the unincorporated areas, residential and commercial recyclables collection is open market with residents and businesses contracting with private haulers directly. However, the County currently contracts with Waste Management (WM) to collect single stream recyclables at Collection Centers and from Beaches and Parks in the BPRL program. Table 1-1 lists these locations that were included in the RCS along with the tonnages of single stream recyclables reported in calendar year 2019 (CY19). For the purposes of this RCS, Beaches were evaluated separately from Parks in the BPRL program.

[1] Florida Bureau of Economic and Business Research, University of Florida.

Table 1-1: County Recyclables Collection Location

Collection Centers	CY19 Tons
A.L. Anderson Park	125.7
Bank of America	130.1
Brooker Creek Preserve	17.0
Curlew Road	302.3
Ft. Desoto Park – Boat Ramp & Campground	36.9
Hamlin Boulevard	145.6
John Chesnut Park	386.6
Lake Seminole Park	186.2
North County Government Center	173.9
Pinellas County Extension	41.7
Pinellas County Solid Waste	91.9
Sand Key Park	7.0
Walmart Coachman Road	42.8
William E. Dunn Water Reclamation Facility	160.9
Total	**1,848.6**

Beaches	CY19 Tons
City of St. Pete Beach	2.9
City of Treasure Island	6.7
Indian Rocks Beach	17.0
Honeymoon Island	21.7
Ft. Desoto Park	16.3
Fred Howard Park	7.1
Redington Beach	*
Redington Shores Beach Access	4.3
Sand Key Park	9.2
St. Pete Beach Access	7.1
Total	**92.3**

*Redington Beach recyclables are collected with Boca Ciega Park.

Parks	CY19 Tons
A.L. Anderson Park	0.7
Boca Ciega Park	3.5
Eagle Lake Park	3.9
John Chesnut Park	2.8
John Taylor Park	5.0
Lake Seminole Park	4.0
Philippe Park	2.9
Putnam Park	1.6
Sawgrass Lake Park	4.3
Sunderman Park	1.8
Walsingham Park	3.2
Wall Springs Park	1.3
War Veterans Memorial Park	3.9
Weedon Island Preserve	3.5
Total	**42.4**

1.3 Acknowledgements

KCI would like to acknowledge and thank all County staff members and contractors who assisted with the planning and logistics of this RCS. KCI would also like to thank WM for their cooperation in coordinating the delivery of recyclables during the RCS. The cooperation and positive attitudes of all team members were essential to the success of the RCS.

Section 2
Methodology

2.1 Dates, Location, Equipment, and Labor

The RCS was conducted Monday through Friday for three consecutive weeks from October 12-30, 2020. All sampling and sorting occurred at the Hand Unload area of the County's Solid Waste Disposal Complex (SWDC) located at 3095 114th Avenue N., St. Petersburg, FL 33716. The RCS outlined in this report was conducted concurrently with a municipal RCS that evaluated recyclables from 18 municipalities in the County (Work Order 4). The methodology, results, and findings of the municipal RCS are discussed in a separate report.

KCI provided all sorting equipment; safety gear; a primary and backup scale calibrated to 0.02 pounds; and two experienced staff persons to oversee all sampling, sorting, weighing, and data recording. The County provided a loader and operator to mix loads and pull samples and provided roll-off containers to remove materials upon completion of sorting activities. KCI provided the sorting labor through a local temporary labor company.

KCI prepared and County staff reviewed and approved a site safety plan that was followed throughout the sorting event. KCI worked closely with County staff to coordinate and set up a sort location that would ensure worker safety. Each morning of the event, sorters were given thorough safety instructions by one of KCI's Supervisors to ensure worker safety and proper sorting. No injuries occurred during the sorting event.

2.2 Material Categories

Recyclables were sorted into the 36 material categories defined in Appendix A. KCI worked with County staff to develop and define these material categories and ensure they met the objectives of the RCS.

2.3 Sampling and Sorting Procedures

During the fifteen-day sorting event, representative samples were pulled from 20 loads of County recyclables. For Beaches, a dedicated collection route collected recyclables from all Beaches listed in Table 1-1 on each Tuesday of the RCS. One sample was pulled from each of these routes for a total of 3 Beaches samples. For Parks, a dedicated collection route collected recyclables from all Parks listed in Table 1-1 on each Thursday of the RCS. One sample was pulled from each of these routes for a total of 3 Parks samples. During the third week of the RCS, one sample was pulled from the recyclables roll-off container at each of the Collection Centers listed in Table 1-1 for a total of 14 samples. (Note: Fort Desoto Boat Ramp material was not delivered during the RCS). KCI worked with County and WM staff to schedule the collection of these recyclables and deliver them to the sort site at the SWDC. KCI prepared placards that were distributed to WM, who then distributed them to their drivers for each selected route directing them to tip at the study site. Table 2-1 details the daily sampling schedule followed during the RCS.

Table 2-1: Daily Sampling Schedule

Program	Tue 10/13	Thu 10/15	Tue 10/20	Thu 10/22	Mon 10/26	Tue 10/27	Wed 10/28	Thu 10/29	Fri 10/30	Total
Beaches	1		1			1				**3**
Parks		1		1*				1		**3**
Collection Centers					Chesnut Park, A.L. Anderson, Curlew, Hamlin, Lake Seminole	Dunn, Walmart, Solid Waste	N. County Gov Center, Bank of America	Extension, Ft. Desoto Campground	Sand Key, Brooker Creek	**14**
Total	**1**	**1**	**1**	**1**	**5**	**4**	**2**	**3**	**2**	**20**

*Recyclables from Wall Springs were not able to be picked up on 10/22. This likely had minimal impact on the composition.

Each vehicle's driver was directed to tip their load at the designated area of the sort site. To obtain a representative sample of the load, a loader mixed the load several times to disrupt any settling and stratification that occurred during collection and transport. This helped to ensure a thorough distribution of materials throughout the load, including any heavy materials at the bottom of the load. A representative sample of at least 150 pounds was pulled from a random portion of the mixed pile. The sample was placed on a tarp, labeled, and stored until sorted.

Individual samples were transferred to KCI's custom sorting table, which included a ½-inch screen to sieve grit. The entire sample was hand-sorted off the ½-inch screen into the previously defined material categories. Any material that passed through the ½-inch screen was swept into the grit category. After the entire sample was sorted, KCI staff weighed and recorded the net weights of each material category using a tablet-based data log. This process was repeated for all 20 samples.

All bagged recyclables from all samples (municipal and County) were saved after weighing the sorted materials from each sample, aggregated, opened, and sorted at the end of the RCS.

2.4 Analytical Procedures

After fieldwork was completed, KCI calculated the weighted average of each material category to determine composition of 1) BPRL recyclables, 2) Collection Center recyclables, and 3) combined County-managed recyclables. The average compositions for the BPRL recyclables were weighted by the net load weight of each load sampled in the RCS and by the total CY19 tonnage for the BPRL program. The average composition of Collection Center recyclables was weighted by the total CY19 tonnage from each Collection Center. Weighting the average ensures that the contribution of each load/program/center is equitably accounted for in overall composition. Data analysis followed industry-accepted standards for statistical sampling, as outlined in the *ASTM Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste (D5231-92; reapproved 2016)*. A 90 percent confidence interval (CI) was calculated, using a standard statistical t-distribution table, for each material category in the composition.

Section 3
Results

3.1 Introduction to Results

The composition of recyclables in each of the County's recycling programs is presented and discussed in this section. Unless otherwise stated, all results presented in this section are expressed in percentage by weight. The percentages included in the tables and figures are the weighted average values for each material category. Where possible, the results also provide a 90 percent CI for each material category. The CI indicates that with a 90 percent level of confidence the actual arithmetic mean is within the upper and lower limits shown. (Note: Because this is a statistical analysis, the lower end of the CI may be a negative number.) This interval provides an understanding of how much variation occurred in the quantity of that material category found in the samples sorted. Generally, the more homogeneous the stream and the greater the number of samples sorted, the higher the level of accuracy achieved and the narrower the margin between the upper and lower bounds of the CI.

For the purposes of discussion and analysis, materials were grouped by recyclability.

- Recyclable Paper: Paper materials that are accepted in the County's recycling program.
  - Newspaper
  - Corrugated Cardboard
  - Magazines & Catalogs
  - Mixed Recyclable Paper
  - Aseptic Containers/Cartons
- Recyclable Containers: Plastic, metal, and glass containers that are accepted in the County's recycling program.
  - PET Bottles (#1)
  - Natural HDPE Bottles (#2)
  - Colored HDPE Bottles (#2)
  - Non-Bottle PET Containers (#1)
  - Non-Bottle HDPE Containers (#2)
  - PP Containers (#5)
  - Other Plastic Containers (#3,4,6,7)
  - Tin/Steel Cans
  - Aluminum Cans
  - Glass Containers
- Other Recyclables: Non-container materials that are accepted in the County's recycling program.
  - Bulky Rigid Plastics
  - Ferrous Scrap Metal
  - Aluminum Foil and Trays
  - Non-Ferrous Scrap Metal
- Potential Recyclables: Materials that are or include recyclable materials but are not recyclable in their current form and would be considered unacceptable material.
  - Wet Corrugated Cardboard
  - Wet Paper
  - Shredded Paper
  - Film-Wrapped Paper
  - Bagged Recyclables
  - Full Containers
- Contaminants: Materials that are not accepted in the County's recyclable program.
  - Expanded Polystyrene (EPS) Foam
  - Non-Rigid Plastic Film
  - Bagged Waste
  - Tanglers (hoses, cords, rope, etc.)
  - Small Appliances
  - Hazardous/ Special Waste
  - Non-Alkaline Batteries
  - Yard Waste
  - Other Contaminants
  - Grit

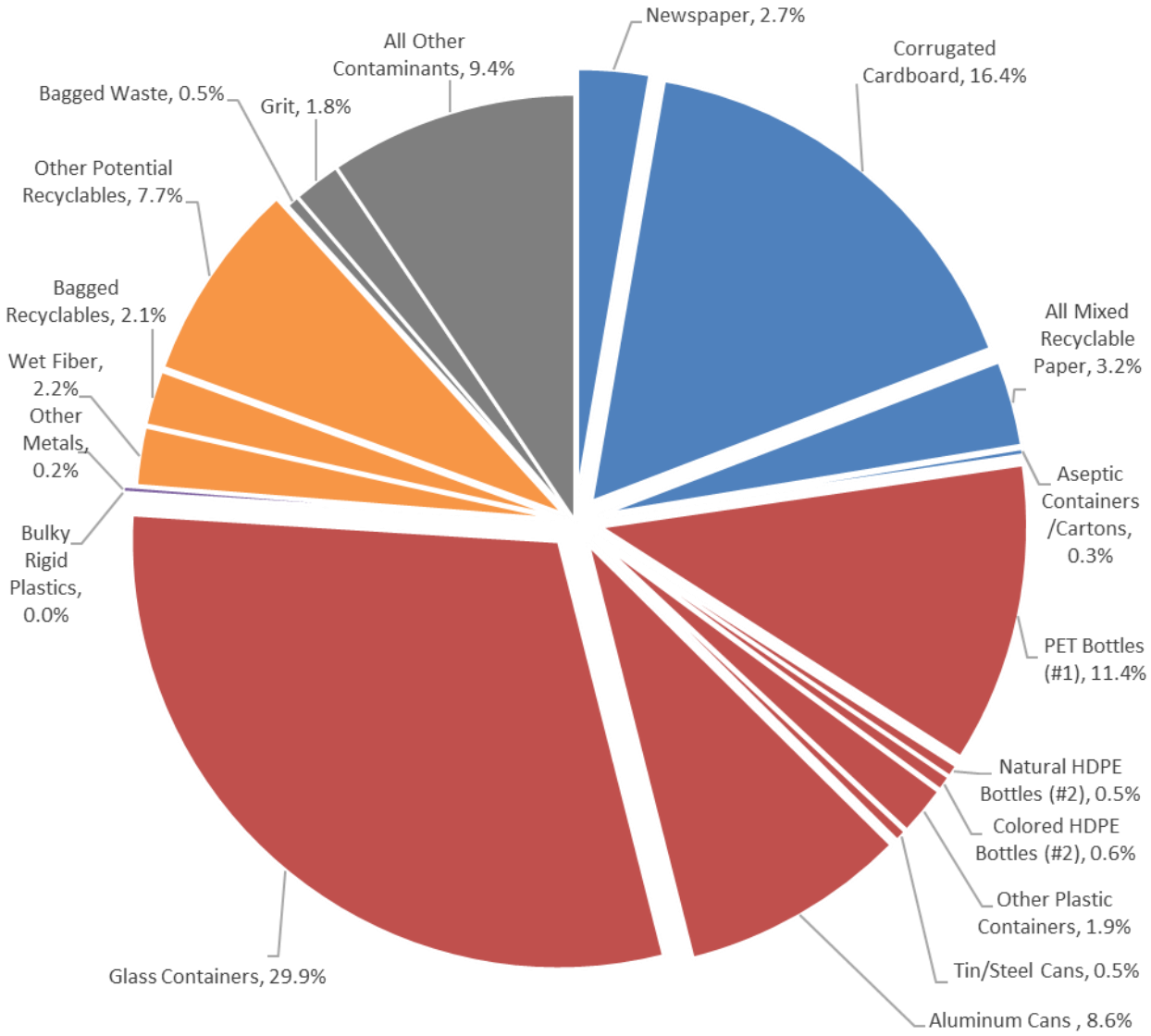
3.2 BPRL Recyclables Composition Results

Figure 3-1 depicts the combined weighted average composition of single stream recyclables in the County's BPRL program. Table 3-1 provides the weighted average composition with a 90 percent CI for each material category measured in the RCS, including individual compositions for the Beaches and Parks and the combined BPRL composition. Figure 3-2 shows pictures of all 6 loads of BPRL recyclables. Results for individual samples are included in Appendix B.

Key findings for the BPRL results include:

- Approximately 76 percent of the recyclables stream was acceptable material while 24 percent was unacceptable.
- Recyclable paper comprised 23 percent of the stream. This was predominantly corrugated cardboard, which may have been added by Parks staff. On average, the samples from the Parks had over twice the percentage of recyclable paper than those from the Beaches (almost three times the corrugated cardboard).
- Over half of the stream (53.3 percent) was recyclable containers. More than half of these were glass containers. PET bottles and aluminum cans were also significant components of the recyclable containers at approximately 11 and 9 percent of the stream, respectively. Beaches recyclables had a much higher average percentage of recyclable containers than the Parks recyclables, especially glass containers, the percentage of which was nearly three times as large.
- Other recyclables (scrap metal and bulky rigid plastics) were fairly minor in the stream.
- Potential recyclables comprised about 12 percent of the stream. Most of these were full containers (7.1 percent), i.e. primarily drink containers with more than 25 percent liquid remaining in them. Wet fiber comprised about 2 percent, which likely is from open containers with liquids placed in the recycling containers. Bagged recyclables comprised about 2 percent of the steam.
- Contaminants comprised the remaining 12 percent of the stream. Materials in the other contaminants category comprised the largest percentage of contaminants. These mostly consisted of small contaminants, such as food waste, low grade paper (napkins, paper towels, and paper cups and plates), and non-recyclable rigid plastics (utensils, lids, straws), with the occasional clothing item. Some larger contaminants in the stream included a beach umbrella and piece of a sail cloth. The Parks samples had a slightly higher average percentage than the Beaches samples.
- A total of 9 bags of recyclables were found in all 6 samples. No tanglers were found.

Figure 3-1: Composition of BPRL Single Stream Recyclables (% by Weight)



Note: For the purposes of this figure, the following categories have been combined:

- All Mixed Recyclable Paper includes the categories of Magazines and Catalogs and Mixed Recyclable Paper.
- Other Plastic Containers includes the categories of Non-Bottle PET Containers (#1), Non-Bottle HDPE Containers (#2), PP Containers (#5), and Other Plastic Containers (#3, #4, #6, #7).
- Other Metals includes the categories of Ferrous Scrap Metal, Aluminum Foil and Trays, and Non-Ferrous Scrap Metal.
- Wet Fiber includes the categories of Wet Corrugated Cardboard and Wet Paper.
- Other Potential Recyclables includes the categories of Shredded Paper, Film-Wrapped Paper, and Full Containers.
- All Other Contaminants includes the categories of EPS Foam, Non-Rigid Plastic Film, Tanglers, Small Appliances, Hazardous/Special Waste, Non-Alkaline Batteries, Yard Waste, and Other Contaminants.

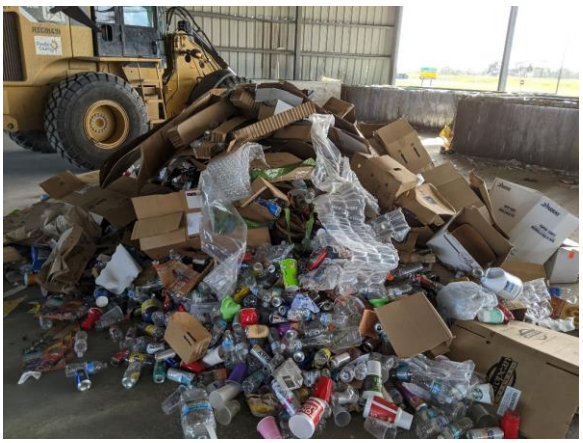
Table 3-1: Composition of BPRL Single Stream Recyclables (% by Weight)

Material Category	Beaches	Parks	Weighted Average	90% CI: Lower Bounds	90% CI: Upper Bounds
Newspaper	3.2%	1.7%	2.7%	1.0%	4.4%
Corrugated Cardboard	10.6%	29.2%	16.4%	6.8%	26.1%
Magazines and Catalogs	0.7%	0.1%	0.5%	0.0%	1.0%
Mixed Recyclable Paper	2.4%	3.6%	2.7%	1.1%	4.3%
Aseptic Containers/Cartons	0.2%	0.3%	0.3%	0.1%	0.4%
Recyclable Paper	**17.0%**	**35.0%**	**22.7%**	**12.5%**	**32.8%**
PET Bottles (#1)	10.8%	12.6%	11.4%	8.9%	13.9%
Natural HDPE Bottles (#2)	0.2%	1.0%	0.5%	0.1%	0.8%
Colored HDPE Bottles (#2)	0.4%	0.9%	0.6%	0.1%	1.0%
Non-Bottle PET Containers (#1)	0.5%	0.4%	0.4%	0.4%	0.5%
Non-Bottle HDPE Containers (#2)	0.0%	0.1%	0.1%	-0.1%	0.2%
PP Containers (#5)	1.0%	1.0%	1.0%	0.7%	1.2%
Other Plastic Containers (#3,4,6,7)	0.4%	0.4%	0.4%	0.2%	0.6%
Tin/Steel Cans	0.5%	0.4%	0.5%	0.3%	0.6%
Aluminum Cans	9.5%	6.7%	8.6%	7.0%	10.2%
Glass Containers	37.4%	13.7%	29.9%	19.4%	40.5%
Recyclable Containers	**60.6%**	**37.4%**	**53.3%**	**41.2%**	**65.5%**
Bulky Rigid Plastics	0.0%	0.1%	0.0%	-0.1%	0.1%
Ferrous Scrap Metal	0.0%	0.1%	0.0%	0.0%	0.1%
Aluminum Foil and Trays	0.0%	0.1%	0.0%	0.0%	0.1%
Non-Ferrous Scrap Metal	0.2%	0.0%	0.2%	0.0%	0.3%
Other Recyclables	**0.3%**	**0.3%**	**0.3%**	0.1%	0.4%
Wet Corrugated Cardboard	0.0%	2.7%	0.9%	-0.5%	2.3%
Wet Paper	1.4%	1.3%	1.3%	0.6%	2.1%
Shredded Paper	0.0%	0.0%	0.0%	0.0%	0.0%
Film-Wrapped Paper	0.6%	0.5%	0.6%	0.2%	1.0%
Bagged Recyclables	2.0%	2.2%	2.1%	-1.2%	5.4%
Full Containers	7.1%	6.9%	7.1%	4.4%	9.7%
Potential Recyclables	**11.2%**	**13.6%**	**12.0%**	8.1%	15.8%
EPS Foam	0.1%	0.1%	0.1%	0.0%	0.1%
Non-Rigid Plastic Film	1.0%	1.4%	1.1%	0.3%	1.9%
Bagged Waste	0.2%	1.2%	0.5%	-0.2%	1.2%
Tanglers	0.0%	0.0%	0.0%	0.0%	0.0%
Small Appliances	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous/Special Waste	0.0%	0.0%	0.0%	0.0%	0.0%
Non-Alkaline Batteries	0.0%	0.0%	0.0%	0.0%	0.0%
Yard Waste	0.0%	0.0%	0.0%	0.0%	0.1%
Other Contaminants	7.8%	9.1%	8.2%	5.9%	10.6%
Grit	1.7%	2.0%	1.8%	1.1%	2.5%
Contaminants	**10.8%**	**13.8%**	**11.8%**	8.3%	15.2%
Total Acceptable Material	**77.9%**	**72.6%**	**76.3%**		
Total Unacceptable Material	**22.1%**	**27.4%**	**23.7%**		
Total	**100.0%**	**100.0%**	**100.0%**		
Annual Tonnage (CY19)	**92.3**	**42.4**	**134.7**		

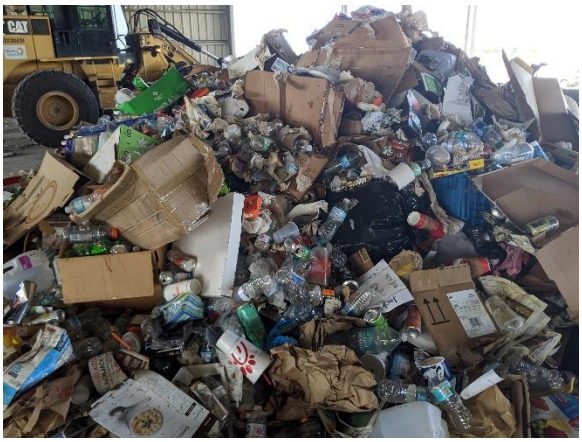
Note: Columns may not appear to sum correctly due to rounding.

Figure 3-2: Photos of BPRL Loads

Beaches



Parks



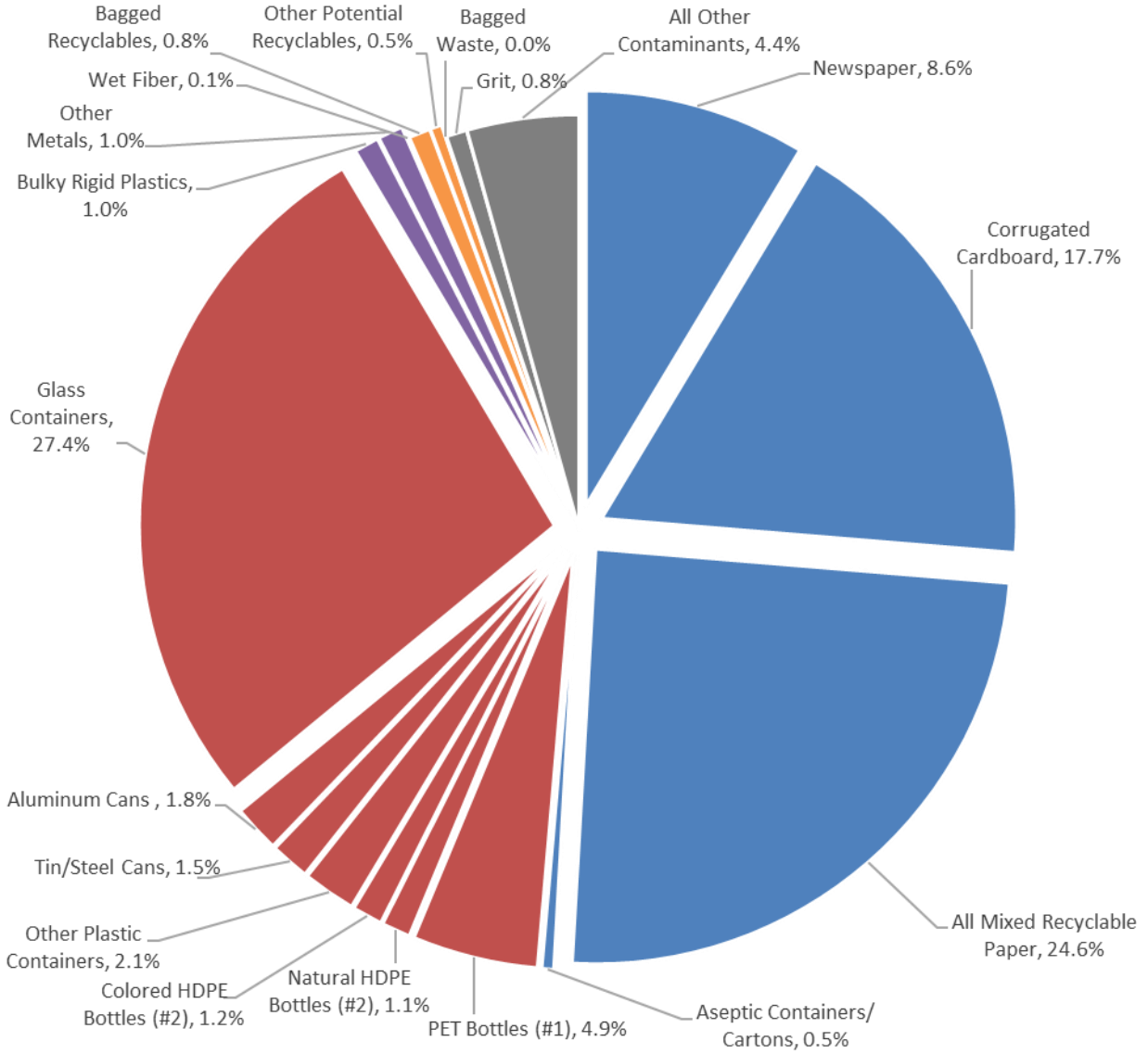
3.3 Collection Center Recyclables Composition Results

Figure 3-3 depicts the combined weighted average composition of single stream recyclables in the County's Collection Center recycling program. Table 3-2 provides the weighted average composition with a 90 percent CI for each material category measured in the RCS. Figure 3-4 shows photos of three loads of Collection Center recyclables. Results for individual samples are included in Appendix B.

Key findings for the Collection Center recycling results include:

- Over 93 percent of the recyclables stream was acceptable material, while less than 7 percent of the stream was unacceptable material.
- Approximately 50 percent of the recyclables stream was recyclable paper. Corrugated cardboard had the highest percentage, but the stream also had significant quantities of newspaper, magazines and catalogs, and mixed recyclable paper.
- Recyclable containers comprised about 40 percent of the stream. Most of these were glass containers (27.4 percent).
- About 2 percent of the stream was other recyclables, i.e. bulky rigid plastics and scrap metal.
- Less than 2 percent of the stream was potential recyclables, which were mostly bagged recyclables and full containers.
- Only about 5 percent of the stream was contaminants. These were nearly all materials in the other contaminants category, which included non-recyclable paper and plastic items and some textile items. The sample from Lake Seminole was the only one that had more than 10 percent contamination.
- A total of 9 bags of recyclables and 5 tanglers were found in all 14 samples.

Figure 3-3: Composition of Collection Center Single Stream Recyclables (% by Weight)



Note: For the purposes of this figure, the following categories have been combined:

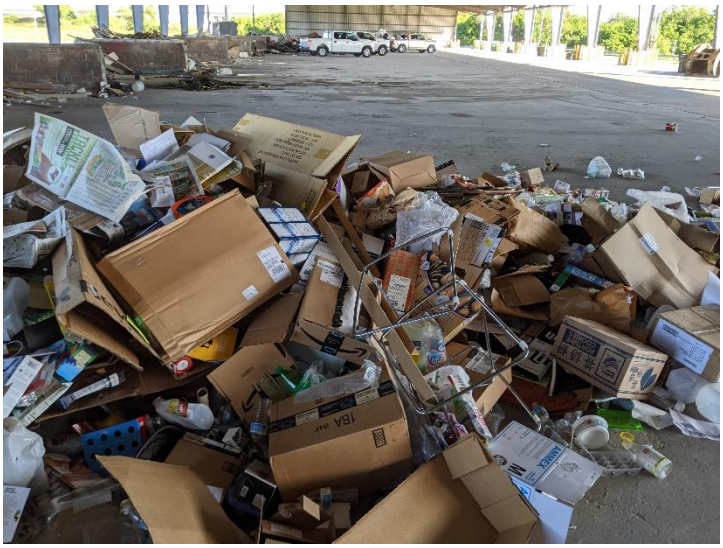
- All Mixed Recyclable Paper includes the categories of Magazines and Catalogs and Mixed Recyclable Paper.
- Other Plastic Containers includes the categories of Non-Bottle PET Containers (#1), Non-Bottle HDPE Containers (#2), PP Containers (#5), and Other Plastic Containers (#3, #4, #6, #7).
- Other Metals includes the categories of Ferrous Scrap Metal, Aluminum Foil and Trays, and Non-Ferrous Scrap Metal.
- Wet Fiber includes the categories of Wet Corrugated Cardboard and Wet Paper.
- Other Potential Recyclables includes the categories of Shredded Paper, Film-Wrapped Paper, and Full Containers.
- All Other Contaminants includes the categories of EPS Foam, Non-Rigid Plastic Film, Tanglers, Small Appliances, Hazardous/Special Waste, Non-Alkaline Batteries, Yard Waste, and Other Contaminants.

Table 3-2: Composition of Collection Center Single Stream Recyclables (% by Weight)

Material Category	Weighted Average	90% CI: Lower Bounds	90% CI: Upper Bounds
Newspaper	8.6%	3.8%	13.5%
Corrugated Cardboard	17.7%	14.7%	20.7%
Magazines and Catalogs	10.4%	5.6%	15.2%
Mixed Recyclable Paper	14.2%	11.9%	16.5%
Aseptic Containers/Cartons	0.5%	0.3%	0.6%
Recyclable Paper	**51.4%**	**44.1%**	**58.7%**
PET Bottles (#1)	4.9%	3.9%	5.9%
Natural HDPE Bottles (#2)	1.1%	0.9%	1.4%
Colored HDPE Bottles (#2)	1.2%	1.0%	1.4%
Non-Bottle PET Containers (#1)	1.1%	0.8%	1.4%
Non-Bottle HDPE Containers (#2)	0.2%	0.1%	0.2%
PP Containers (#5)	0.6%	0.5%	0.7%
Other Plastic Containers (#3,4,6,7)	0.2%	0.2%	0.3%
Tin/Steel Cans	1.5%	1.2%	1.9%
Aluminum Cans	1.8%	1.6%	2.1%
Glass Containers	27.4%	21.8%	33.1%
Recyclable Containers	**40.1%**	**34.0%**	**46.2%**
Bulky Rigid Plastics	1.0%	0.3%	1.6%
Ferrous Scrap Metal	0.9%	0.2%	1.5%
Aluminum Foil and Trays	0.0%	0.0%	0.1%
Non-Ferrous Scrap Metal	0.1%	-0.1%	0.2%
Other Recyclables	**1.9%**	0.7%	3.2%
Wet Corrugated Cardboard	0.0%	0.0%	0.0%
Wet Paper	0.1%	-0.1%	0.2%
Shredded Paper	0.0%	0.0%	0.1%
Film-Wrapped Paper	0.1%	0.0%	0.1%
Bagged Recyclables	0.8%	0.2%	1.5%
Full Containers	0.4%	0.0%	0.7%
Potential Recyclables	**1.4%**	0.5%	2.2%
EPS Foam	0.0%	0.0%	0.1%
Non-Rigid Plastic Film	0.2%	0.2%	0.3%
Bagged Waste	0.0%	0.0%	0.1%
Tanglers	0.0%	0.0%	0.0%
Small Appliances	0.0%	0.0%	0.0%
Hazardous/Special Waste	0.0%	0.0%	0.0%
Non-Alkaline Batteries	0.0%	0.0%	0.0%
Yard Waste	0.3%	-0.1%	0.6%
Other Contaminants	3.8%	2.8%	4.9%
Grit	0.8%	0.5%	1.2%
Contaminants	**5.2%**	3.8%	6.7%
Total Acceptable Material	**93.4%**		
Total Unacceptable Material	**6.6%**		
Total	**100.0%**		

Note: Columns may not appear to sum correctly due to rounding.

Figure 3-4: Photos of Collection Center Recyclables Loads



3.4 County-Managed Recyclables Composition Results

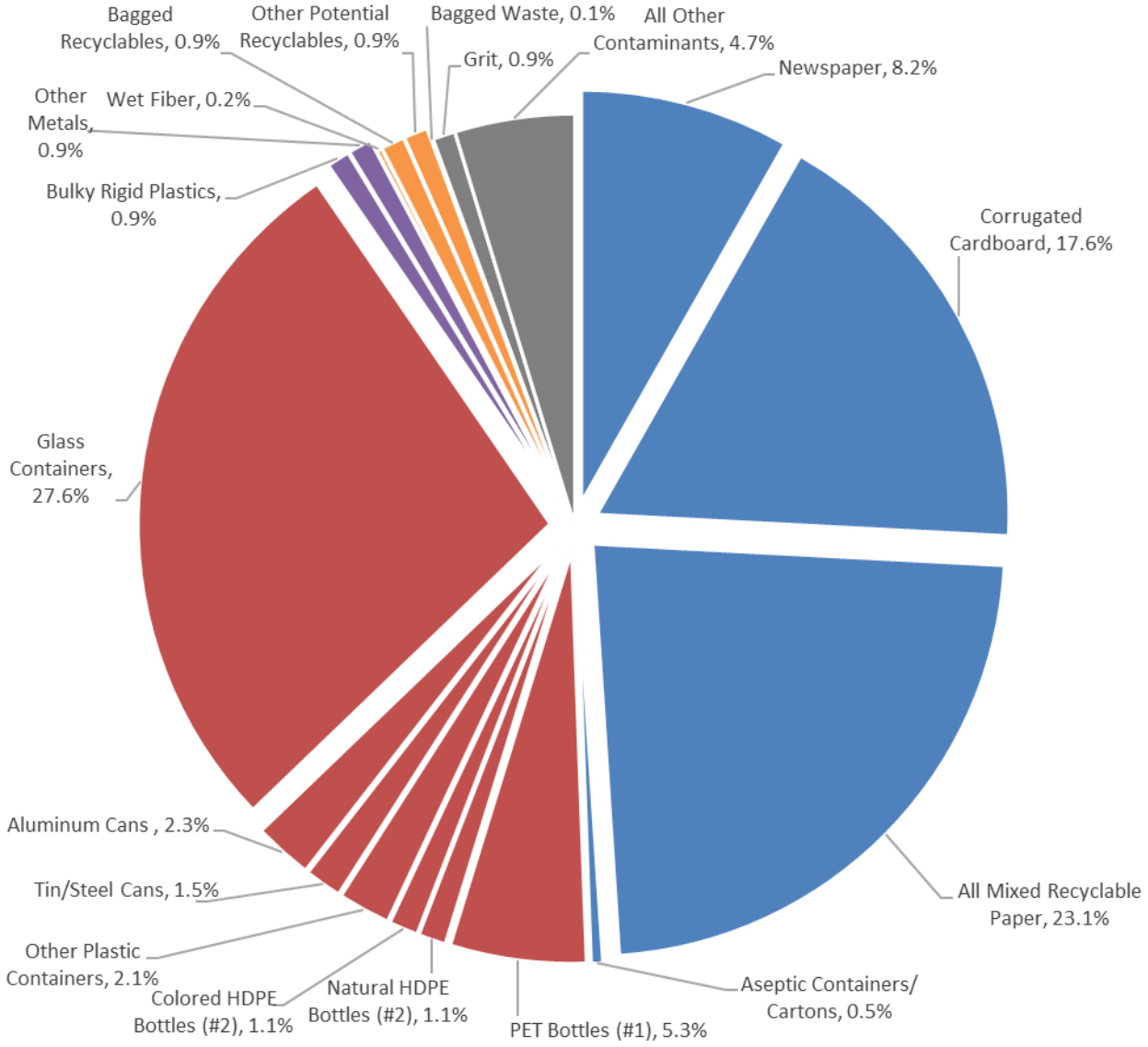
Figure 3-5 depicts the combined weighted average composition of single stream recyclables managed by the County. Table 3-3 provides the weighted average composition with a 90 percent CI for each material category measured in the RCS. Results for individual samples are included in Appendix B.

Because this is a weighted average based on the reported CY19 tonnage and the tonnage from Collection Centers was an order of magnitude larger than the BPRL tonnage, the County-controlled composition is more similar to the Collection Center composition.

Key findings for County-managed recycling results include:

- Approximately 92 percent of the stream was acceptable material and 8 percent was unacceptable material.
- Recyclable paper comprised nearly 50 percent of the stream, with corrugated cardboard and mixed recyclable paper comprising the majority of that paper. Recyclable paper was much higher at the Collection Centers, although corrugated cardboard was fairly similar.
- About 41 percent of the stream was recyclable containers, predominantly glass containers. BPRL recyclables had a much higher percentage of containers, especially PET bottles and aluminum cans, which are more likely to be consumed in public places in a higher percentage than in residential drop-off material.
- About 2 percent was other recyclables, which were mostly from Collection Centers.
- Another 2 percent was potential recyclables, which were nearly all bagged recyclables and full containers. All categories of these (except shredded paper) were much higher in the BPRL recyclables.
- Contaminants comprised about 6 percent of the stream, which is fairly low for single stream recyclables. This is because the Collection Centers had a low percent of contaminants. The BPRL recyclables had nearly twice the percentage of contaminants.

Figure 3-5: Composition of County-Managed Single Stream Recyclables (% by Weight)



Note: For the purposes of this figure, the following categories have been combined:

- All Mixed Recyclable Paper includes the categories of Magazines and Catalogs and Mixed Recyclable Paper.
- Other Plastic Containers includes the categories of Non-Bottle PET Containers (#1), Non-Bottle HDPE Containers (#2), PP Containers (#5), and Other Plastic Containers (#3, #4, #6, #7).
- Other Metals includes the categories of Ferrous Scrap Metal, Aluminum Foil and Trays, and Non-Ferrous Scrap Metal.
- Wet Fiber includes the categories of Wet Corrugated Cardboard and Wet Paper.
- Other Potential Recyclables includes the categories of Shredded Paper, Film-Wrapped Paper, and Full Containers.
- All Other Contaminants includes the categories of EPS Foam, Non-Rigid Plastic Film, Tanglers, Small Appliances, Hazardous/Special Waste, Non-Alkaline Batteries, Yard Waste, and Other Contaminants.

Table 3-3: Composition of County-Managed Single Stream Recyclables (% by Weight)

Material Category	BPRL	Collection Centers	Weighted Average	90% CI: Lower Bounds	90% CI: Upper Bounds
Newspaper	2.7%	8.6%	8.2%	4.6%	11.8%
Corrugated Cardboard	16.4%	17.7%	17.6%	14.3%	20.9%
Magazines and Catalogs	0.5%	10.4%	9.7%	6.0%	13.4%
Mixed Recyclable Paper	2.7%	14.2%	13.4%	10.7%	16.2%
Aseptic Containers/Cartons	0.3%	0.5%	0.5%	0.3%	0.6%
Recyclable Paper	**22.7%**	**51.4%**	**49.4%**	**42.5%**	**56.4%**
PET Bottles (#1)	11.4%	4.9%	5.3%	3.9%	6.7%
Natural HDPE Bottles (#2)	0.5%	1.1%	1.1%	0.9%	1.3%
Colored HDPE Bottles (#2)	0.6%	1.2%	1.1%	0.9%	1.4%
Non-Bottle PET Containers (#1)	0.4%	1.1%	1.0%	0.8%	1.3%
Non-Bottle HDPE Containers (#2)	0.1%	0.2%	0.2%	0.1%	0.2%
PP Containers (#5)	1.0%	0.6%	0.6%	0.5%	0.7%
Other Plastic Containers (#3,4,6,7)	0.4%	0.2%	0.2%	0.2%	0.3%
Tin/Steel Cans	0.5%	1.5%	1.5%	1.1%	1.8%
Aluminum Cans	8.6%	1.8%	2.3%	1.1%	3.5%
Glass Containers	29.9%	27.4%	27.6%	23.0%	32.2%
Recyclable Containers	**53.3%**	**40.1%**	**41.0%**	**35.8%**	**46.2%**
Bulky Rigid Plastics	0.0%	1.0%	0.9%	0.4%	1.4%
Ferrous Scrap Metal	0.0%	0.9%	0.8%	0.3%	1.3%
Aluminum Foil and Trays	0.0%	0.0%	0.0%	0.0%	0.1%
Non-Ferrous Scrap Metal	0.2%	0.1%	0.1%	0.0%	0.2%
Other Recyclables	**0.3%**	**1.9%**	**1.8%**	0.9%	2.7%
Wet Corrugated Cardboard	0.9%	0.0%	0.1%	-0.3%	0.5%
Wet Paper	1.3%	0.1%	0.1%	-0.1%	0.4%
Shredded Paper	0.0%	0.0%	0.0%	0.0%	0.0%
Film-Wrapped Paper	0.6%	0.1%	0.1%	0.0%	0.2%
Bagged Recyclables	2.1%	0.8%	0.9%	0.0%	1.9%
Full Containers	7.1%	0.4%	0.8%	-0.6%	2.3%
Potential Recyclables	**12.0%**	**1.4%**	**2.1%**	-0.2%	4.4%
EPS Foam	0.1%	0.0%	0.0%	0.0%	0.1%
Non-Rigid Plastic Film	1.1%	0.2%	0.3%	0.0%	0.6%
Bagged Waste	0.5%	0.0%	0.1%	-0.1%	0.3%
Tanglers	0.0%	0.0%	0.0%	0.0%	0.0%
Small Appliances	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous/Special Waste	0.0%	0.0%	0.0%	0.0%	0.0%
Non-Alkaline Batteries	0.0%	0.0%	0.0%	0.0%	0.0%
Yard Waste	0.0%	0.3%	0.2%	0.0%	0.5%
Other Contaminants	8.2%	3.8%	4.1%	2.8%	5.4%
Grit	1.8%	0.8%	0.9%	0.5%	1.2%
Contaminants	**11.8%**	**5.2%**	**5.7%**	**3.8%**	**7.5%**
Total Acceptable Material	**76.3%**	**93.4%**	**92.3%**		
Total Unacceptable Material	**23.7%**	**6.6%**	**7.7%**		
Total	**100.0%**	**100.0%**	**100.0%**		
Annual Tonnage (CY19)	**134.7**	**1,848.6**	**1,983.3**		

Note: Columns may not appear to sum correctly due to rounding.

Section 4
Findings

This RCS provides the County with a current estimate of the composition of single stream recyclables it manages through its BPRL and Collection Centers recycling programs. This information is an essential step in the County understanding what is in the recyclables they manage for future planning purposes, and it provides valuable data to target contamination in future education and outreach efforts.

The County-managed single stream recyclables were 92 percent acceptable material. Corrugated cardboard, mixed recyclable paper, and glass containers had the highest percentages. In fact, these three materials comprised almost 60 percent of the recyclables stream.

Overall, unacceptable material (potential recyclables + contaminants) was about 8 percent of the County-managed recyclables stream.

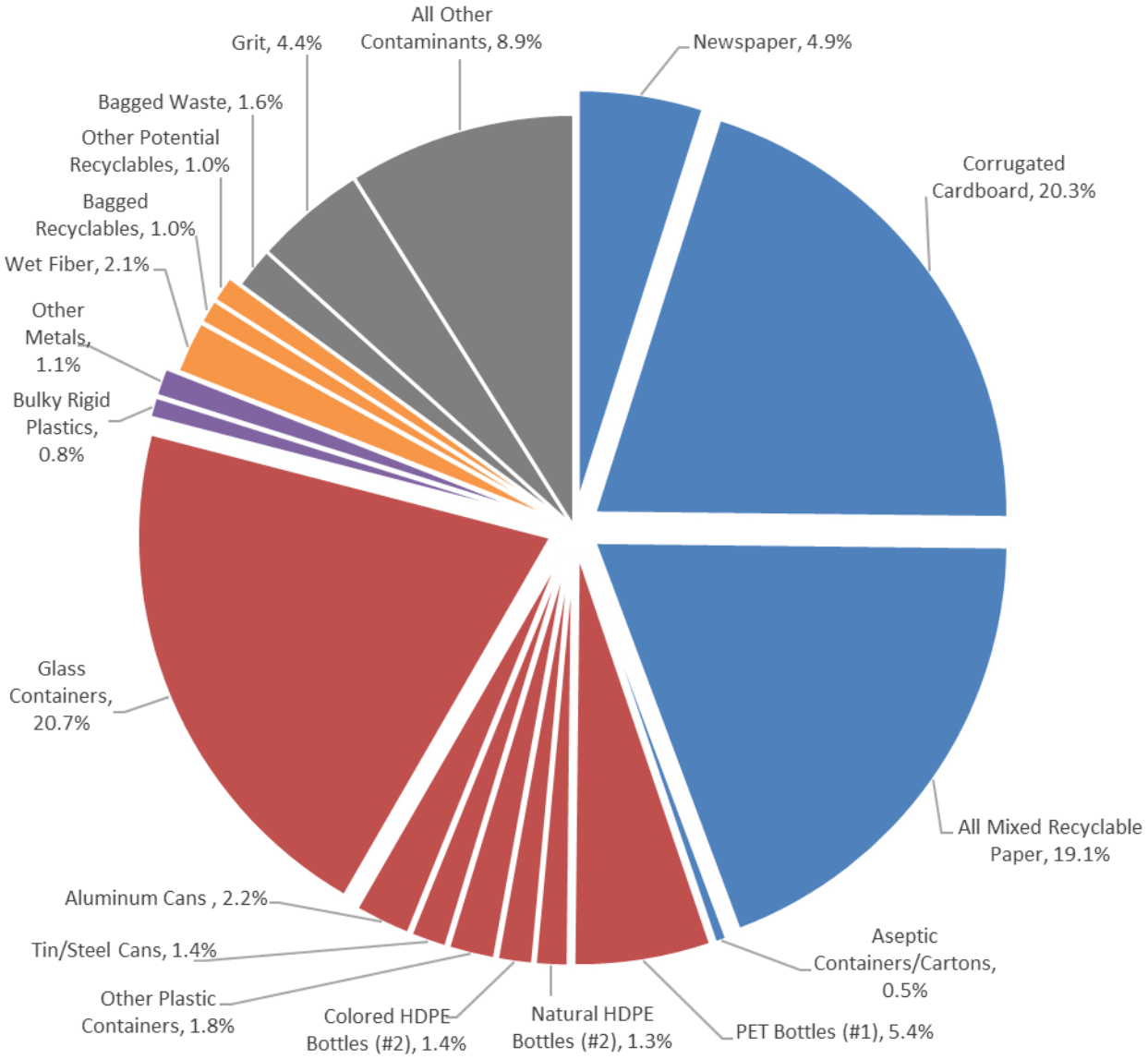
- Materials in the other contaminants category were the largest source of unacceptable material and were much higher in the BPRL recyclables. This category comprised many different types of contaminants but were generally small contaminants like food waste and non-recyclable paper and plastic. Some of these items could be due to misunderstanding of what materials are recyclable. For example, a number of paper cups and plates were found in the BPRL Recyclables. It is presumed that customers attempted to recycle them, because they believe all paper products can be recycled.
- Full containers represented a significant amount of unacceptable material in the BPRL recyclables. These were primarily drink containers that people discarded before finishing. These liquids represented a significant amount of weight relative to the weight of the container, nevertheless because of the weight of these containers, they would likely be sorted into contamination during processing. To reduce this, signage on the BPRL recycling containers could encourage people to finish their drinks and/or empty it in the trash or elsewhere. A container could also be placed next to the recycling container into which people could empty their drinks. This could also help reduce some of the wet fiber in the recyclables from open containers that people placed in the recyclable container.
- Bagged recyclables comprised approximately 1 percent of the stream. This was more significant in the BPRL samples, with one Beaches sample having 5 percent bagged recyclables and a single Parks sample with almost 10 percent. Several samples from Collection Centers had 2 or 3 percent bagged recyclables. Ideally, bagged recyclables should be eliminated at the source through education and outreach. In addition, equipment could be installed in a materials recovery facility (MRF) to open these bags, in order to capture the recyclable material within them.
- For public recycling containers, such as those in the BPRL program, placement, container design, and signage are integral in the effectiveness in reducing unacceptable material in this type of collection program. This was outside the scope of this RCS, but further evaluation of these containers may be warranted to help reduce unacceptable materials in this stream.

Figure 4-1 and Table 4-1 combines the composition of County-managed recyclables and municipal recyclables (from the Municipal RCS Report) to calculate the weighted average composition of Countywide publicly controlled single stream recyclables. These are single stream recyclables that are either collected directly by a public entity or collected by a private hauler under contract with a public entity. Because the tonnage of municipal recyclables is much greater than the County-managed recyclables, the composition of the municipal recyclables has a much greater impact on the overall composition than the County-managed recyclables. On average, 81 percent of the recyclables stream was acceptable recyclables, while 19 percent was unacceptable material. The County-managed recyclables had a much lower percentage of unacceptable material due to how clean the Collection Center recyclables were.

Table 4-1 also shows the composition of the contents of bagged recyclables from all samples (municipal and County) and the Countywide composition with the contents of the bagged recyclables added to their respective material categories. This represents if these bags were opened during processing. Because bagged recyclables were only 1 percent of the overall stream, applying their contents to the Countywide composition does not have a significant impact, other than a slight reduction in the contaminants percentage. However, this does provide useful information for targeted education and outreach efforts to reduce bagged recyclables.

KCI appreciates the opportunity to once again work with the County in their ongoing efforts to increase waste diversion and recycling.

Figure 4-1: Composition of Countywide Publicly Controlled Recyclables (% by Weight)



Note: For the purposes of this figure, the following categories have been combined:

- All Mixed Recyclable Paper includes the categories of Magazines and Catalogs and Mixed Recyclable Paper.
- Other Plastic Containers includes the categories of Non-Bottle PET Containers (#1), Non-Bottle HDPE Containers (#2), PP Containers (#5), and Other Plastic Containers (#3, #4, #6, #7).
- Other Metals includes the categories of Ferrous Scrap Metal, Aluminum Foil and Trays, and Non-Ferrous Scrap Metal.
- Wet Fiber includes the categories of Wet Corrugated Cardboard and Wet Paper.
- Other Potential Recyclables includes the categories of Shredded Paper, Film-Wrapped Paper, and Full Containers.
- All Other Contaminants includes the categories of EPS Foam, Non-Rigid Plastic Film, Tanglers, Small Appliances, Hazardous/Special Waste, Non-Alkaline Batteries, Yard Waste, and Other Contaminants.

Table 4-1: Composition of Countywide Publicly Controlled Recyclables (% by Weight)

Material Category	Municipal Recyclables	County Recyclables	Countywide Weighted Average	95% CI: Lower Bounds	95% CI: Upper Bounds	Bagged Recyc.	Countywide w/ Bag Contents
Newspaper	4.7%	8.2%	4.9%	4.1%	5.7%	3.7%	4.9%
Corrugated Cardboard	20.4%	17.6%	20.3%	18.7%	21.9%	2.6%	20.3%
Magazines and Catalogs	3.8%	9.7%	4.1%	3.4%	4.8%	0.8%	4.1%
Mixed Recyclable Paper	15.1%	13.4%	15.1%	14.1%	16.0%	19.7%	15.2%
Aseptic Containers/Cartons	0.5%	0.5%	0.5%	0.4%	0.5%	1.0%	0.5%
Recyclable Paper	**44.6%**	**49.4%**	**44.8%**	**42.7%**	**46.9%**	**27.7%**	**45.1%**
PET Bottles (#1)	5.4%	5.3%	5.4%	5.0%	5.8%	11.9%	5.5%
Natural HDPE Bottles (#2)	1.3%	1.1%	1.3%	1.2%	1.4%	1.4%	1.3%
Colored HDPE Bottles (#2)	1.4%	1.1%	1.4%	1.3%	1.5%	2.9%	1.4%
Non-Bottle PET Containers (#1)	0.8%	1.0%	0.8%	0.7%	0.9%	2.0%	0.8%
Non-Bottle HDPE Containers (#2)	0.2%	0.2%	0.2%	0.1%	0.2%	0.5%	0.2%
PP Containers (#5)	0.7%	0.6%	0.7%	0.6%	0.7%	1.4%	0.7%
Other Plastic Containers (#3,4,6,7)	0.2%	0.2%	0.2%	0.1%	0.2%	0.4%	0.2%
Tin/Steel Cans	1.4%	1.5%	1.4%	1.3%	1.5%	1.9%	1.4%
Aluminum Cans	2.2%	2.3%	2.2%	2.0%	2.4%	9.1%	2.3%
Glass Containers	20.4%	27.6%	20.7%	18.9%	22.5%	22.6%	20.9%
Recyclable Containers	**33.9%**	**41.0%**	**34.2%**	**32.4%**	**36.1%**	**53.9%**	**34.8%**
Bulky Rigid Plastics	0.8%	0.9%	0.8%	0.6%	1.0%	0.0%	0.8%
Ferrous Scrap Metal	0.9%	0.8%	0.9%	0.7%	1.2%	0.6%	0.9%
Aluminum Foil and Trays	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
Non-Ferrous Scrap Metal	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%
Other Recyclables	**1.9%**	**1.8%**	**1.9%**	1.6%	2.3%	**0.6%**	**1.9%**
Wet Corrugated Cardboard	0.6%	0.1%	0.6%	0.4%	0.8%	0.0%	0.6%
Wet Paper	1.5%	0.1%	1.5%	1.2%	1.7%	0.3%	1.5%
Shredded Paper	0.1%	0.0%	0.1%	0.0%	0.2%	0.0%	0.1%
Film-Wrapped Paper	0.5%	0.1%	0.5%	0.4%	0.6%	0.3%	0.5%
Bagged Recyclables	1.0%	0.9%	1.0%	0.7%	1.3%	0.0%	-
Full Containers	0.4%	0.8%	0.4%	0.2%	0.7%	0.9%	0.5%
Potential Recyclables	**4.1%**	**2.1%**	**4.1%**	3.5%	4.7%	**1.5%**	**3.1%**
EPS Foam	0.2%	0.0%	0.2%	0.1%	0.2%	0.2%	0.2%
Non-Rigid Plastic Film	0.9%	0.3%	0.8%	0.7%	0.9%	6.4%	0.9%
Bagged Waste	1.7%	0.1%	1.6%	1.0%	2.3%	0.0%	1.6%
Tanglers	0.2%	0.0%	0.2%	0.1%	0.3%	0.0%	0.2%
Small Appliances	0.4%	0.0%	0.3%	0.1%	0.6%	0.0%	0.3%
Hazardous/Special Waste	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%
Non-Alkaline Batteries	0.1%	0.0%	0.1%	0.0%	0.2%	0.0%	0.1%
Yard Waste	0.3%	0.2%	0.3%	-0.1%	0.7%	0.0%	0.3%
Other Contaminants	7.1%	4.1%	7.0%	6.2%	7.7%	8.6%	7.0%
Grit	4.6%	0.9%	4.4%	3.9%	5.0%	1.1%	4.4%
Contaminants	**15.4%**	**5.7%**	**15.0%**	13.6%	16.4%	**16.2%**	**15.1%**
Total Acceptable Material	**80.4%**	**92.3%**	**81.0%**			**80.4%**	**81.8%**
Total Unacceptable Material	**19.6%**	**7.7%**	**19.0%**			**19.6%**	**18.2%**
Total	**100.0%**	**100.0%**	**100.0%**			**100.0%**	**100.0%**
Annual Tonnage (CY19)	**40,774**	**1,983**	**42,757**				

Note: Columns may not appear to sum correctly due to rounding.

Appendix A:
Pinellas County
County Recyclables Composition Study
Material Categories Descriptions

Material Categories	Description of Categories
Recyclable Paper	
Newspaper	Newspaper (loose or tied) including other paper normally distributed inside newspaper such as ads, flyers, etc. and other items made from newsprint such as advertising guides. *Does not include bagged newspaper.*
Corrugated Cardboard	Uncoated brown cardboard boxes with a wavy core (no plastic liners or waxy coatings). Includes clean pizza boxes. *Does not include waxy or contaminated cardboard or cardboard within shrink wrap plastic, such as that from a case of bottled water.*
Magazines and Catalogs	All magazines and catalogs, including glossy magazines.
Mixed Recyclable Paper	Printed or unprinted recyclable paper including white, colored, coated and uncoated papers, envelopes, index cards, file folders, telephone books, paperboard, chipboard, Kraft paper, brown paper bags, mail, paperback books, blueprints, and other printed material on glossy and non-glossy paper. *Does not include shredded, contaminated, waxy, or metallic paper*.
Aseptic Containers/ Cartons	Gable-top cartons, aseptic juice boxes, and other similar containers made of coated paperboard.
Recyclable Containers	
PET Bottles (#1)	Clear and colored bottles and jars coded polyethylene terephthalate (PET #1). Examples include soda bottles, water bottles, food jars, etc. *Does not include loose caps and lids.*
Natural HDPE Bottles (#2)	Clear/natural plastic bottles coded high-density polyethylene (HDPE #2). Examples include milk jugs, vinegar bottles, and gallon water bottles. *Does not include loose caps and lids. Containers >3 gallons are considered Bulky Rigid Plastics.*
Colored HDPE Bottles (#2)	Opaque, pigmented plastic bottles coded high-density polyethylene (HDPE #2). Examples include detergent and shampoo bottles. *Does not include loose caps and lids. Containers >3 gallons are considered Bulky Rigid Plastics.*
Non-Bottle PET Containers (#1)	Clear and colored plastic non-bottle, non-jar containers coded PET #1. Examples include clamshell containers, fruit or vegetable platters, and some plastic drink cups.
Non-Bottle HDPE Containers (#2)	Wide-mouthed tubs and containers coded HDPE #2. Examples include large plastic coffee containers and plastic chip tubes, including lids. *Containers >3 gallons are considered Bulky Rigid Plastics.*
PP Containers (#5)	Clear and colored plastic containers coded PP #5. Examples include some dairy product cups and tubs, pill bottles, frozen food trays, and plastic drink cups. *Does not include loose caps and lids. Containers >3 gallons are considered Bulky Rigid Plastics.*
Other Plastic Containers (#3,4,6,7)	All plastic containers coded #3, #4, #6, or #7. Examples include some bottles, some drink cups, some clamshells, and Arizona Iced Tea™ gallon jugs.
Tin/Steel Cans	Tin-plated steel cans, usually food containers and empty aerosol cans, including labels. Includes steel caps/lids.
Aluminum Cans	Aluminum soft drink, beer, food cans, and empty aerosol cans.

Material Categories	Description of Categories
Glass Containers	All clear, green, blue, and amber glass bottles and jars as well as broken container glass pieces.
Other Recyclables	
Bulky Rigid Plastics	Non-container rigid plastic items such as crates, baskets, toys, refuse totes, lawn furniture, laundry baskets, and other large plastic items. Includes containers (e.g. flower pots, buckets, drums) greater than 3 gallons. *Does not include electronic or electric toys, or bulky items consisting of mixed materials.*
Ferrous Scrap Metal	Non-container ferrous materials. Examples include metal clothes hangers, sheet metal products, pipes, miscellaneous metal scraps, pots and pans, and other magnetic metal items.
Aluminum Foil and Trays	Aluminum foil and food trays, such as disposable pie plates and catering trays. *Does not include excessively dirty foil and trays.*
Non-Ferrous Scrap Metal	Non-container, non-foil, non-ferrous metals, such as aluminum cooking pans, copper wiring and tubing, and brass fixtures.
Potential Recyclables	
Wet Corrugated Cardboard	Corrugated cardboard that is waterlogged or has lost structural integrity due to moisture. *Does not include damp cardboard.*
Wet Paper	Newspaper and mixed recyclable paper that is waterlogged or has lost structural integrity due to moisture. *Does not include damp paper.*
Shredded Paper	All significant amounts of shredded paper that can be manually separated. Includes bagged shredded paper. Any negligible amounts of shredded paper will be included in Grit or Other Contaminants.
Film-Wrapped Paper	Newspaper or magazines inside plastics sleeves. Corrugated cardboard within shrink wrap plastic, such as that from a case of bottled water.
Bagged Recyclables	Bags of material that consist primarily (>80%) of recyclable materials.
Full Containers	Any containers filled by 25% or more of food or liquid.
Contaminants	
Expanded Polystyrene (EPS) Foam	Container and non-container materials made of expanded polystyrene, which are typically white but may be pigmented. Examples include coolers, packaging materials, egg cartons, clamshell containers, and disposable cups and plates.
Non-Rigid Plastic Film	Loose and bagged plastic bags, clean garbage bags, shrink wrap, food wrap, re-sealable bags, plastic sheeting, etc.
Bagged Waste	Bags of materials that have a significant amount (>20%) of non-recyclable materials or heavily contaminated recyclables.
Tanglers	Any materials that could potentially be tanglers during processing (i.e. could wrap around an arm), such as hoses, extension cords, Christmas lights, wire hangers.
Small Appliances	Electronics and household appliances primarily composed of mixed materials (plastic, metal, and glass), such as coffee makers, microwaves, fans, irons, hair dryers, electrical kitchenware, and salvageable items such as machinery. *Does not include non-alkaline batteries.*

Material Categories	Description of Categories
Hazardous/Special Waste	All hazardous or other waste that would require special disposal, including motor oil and oil filters, fluorescent lights, paints, solvents, pesticides, and medical wastes.
Non-Alkaline Batteries	Rechargeable, lead-acid, lithium-ion, Ni-Cd, nickel metal hydride, lithium, mercury, silver oxide, or zinc air batteries.
Yard Waste	Shrub and brush prunings, household bedding plants, weeds, leaves, grass clippings, and other landscaping and gardening wastes. Includes planting media (soil, compost, peat moss, etc.).
Liquids	Any liquid or food from containers filled by less than 25% of food or liquid. Note: This category was not included in the composition because these liquids are assumed to be lost during processing and baling.
Other Contaminants	Materials not included in the other categories, such as waxy corrugated cardboard/paper, paper tissue, paper towels, paper plates, contaminated paper (>50% by surface area), ice cream containers, paper cups, diapers, food waste, yard waste, interlocked/multi-material products, non-container glass, loose plastic caps and lids, straws, plastic cutlery and plates.
Grit	All material that falls through a ½-inch-square screen.

Appendix B:
Pinellas County
County Recyclables Composition Study
Individual Sample Results

Table B-1: Individual BPLR Sample Results (% by Weight)

Material Categories	County: Beaches - Tue 10/13, Truck #213936 (Sample #24)	County: Beaches - Tue 10/15, Truck #209265 (Sample #80)	County: Beaches - Tue 10/20, Truck #213936 (Sample #137)	County: Parks - Thu 10/22, Truck #209265 (Sample #35)	County: Parks - Thu 10/27, Truck #209265 (Sample #99)	County: Parks - Thu 10/29, Truck #209265 (Sample #148)
Newspaper	1.2%	6.1%	1.9%	2.7%	0.0%	2.0%
Corrugated Cardboard	9.3%	8.8%	21.2%	26.1%	26.7%	39.7%
Magazines and Catalogs	0.0%	1.6%	0.6%	0.0%	0.2%	0.2%
Mixed Recyclable Paper	1.9%	2.2%	4.7%	3.9%	1.0%	6.2%
Aseptic Containers/Cartons	0.2%	0.2%	0.6%	0.5%	0.2%	0.2%
Recyclable Paper	**12.6%**	**18.8%**	**29.0%**	**33.2%**	**28.1%**	**48.2%**
PET Bottles (#1)	10.9%	9.6%	14.2%	15.7%	11.5%	7.2%
Natural HDPE Bottles (#2)	0.1%	0.3%	0.5%	1.1%	1.0%	0.9%
Colored HDPE Bottles (#2)	0.3%	0.6%	0.3%	1.6%	0.4%	0.1%
Non-Bottle PET Containers (#1)	0.5%	0.4%	0.5%	0.4%	0.5%	0.3%
Non-Bottle HDPE Containers (#2)	0.0%	0.0%	0.2%	0.1%	0.4%	0.0%
PP Containers (#5)	1.0%	0.9%	1.1%	1.4%	0.6%	0.7%
Other Plastic Containers (#3,4,6,7)	0.4%	0.1%	0.8%	0.4%	0.5%	0.3%
Tin/Steel Cans	0.4%	0.7%	0.4%	0.5%	0.4%	0.0%
Aluminum Cans	10.0%	9.2%	8.6%	7.3%	7.4%	4.5%
Glass Containers	41.4%	36.5%	24.3%	13.8%	16.6%	9.7%
Recyclable Containers	**64.9%**	**58.3%**	**51.0%**	**42.2%**	**39.2%**	**23.8%**
Bulky Rigid Plastics	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%
Ferrous Scrap Metal	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%
Aluminum Foil and Trays	0.1%	0.0%	0.0%	0.0%	0.2%	0.0%
Non-Ferrous Scrap Metal	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%
Other Recyclables	**0.4%**	**0.2%**	**0.0%**	**0.3%**	**0.4%**	**0.0%**
Wet Corrugated Cardboard	0.0%	0.0%	0.4%	3.7%	3.1%	0.0%
Wet Paper	2.1%	0.7%	0.5%	0.8%	2.7%	0.4%
Shredded Paper	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Film-Wrapped Paper	0.7%	0.8%	0.0%	1.0%	0.0%	0.0%
Bagged Recyclables	0.0%	5.1%	0.7%	0.0%	0.4%	9.7%
Full Containers	10.3%	3.0%	7.3%	4.5%	7.7%	11.4%
Potential Recyclables	**13.0%**	**9.7%**	**8.9%**	**10.0%**	**13.9%**	**21.5%**
EPS Foam	0.2%	0.0%	0.0%	0.1%	0.1%	0.0%
Non-Rigid Plastic Film	1.2%	0.9%	0.3%	0.6%	3.2%	0.8%
Bagged Waste	0.0%	0.4%	0.0%	2.3%	0.0%	0.5%
Tanglers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Small Appliances	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous/Special Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-Alkaline Batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Yard Waste	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Other Contaminants	6.5%	8.8%	9.8%	9.6%	12.1%	3.9%
Grit	1.1%	2.8%	0.8%	1.7%	2.9%	1.3%
Contaminants	**9.0%**	**13.1%**	**11.1%**	**14.3%**	**18.3%**	**6.5%**
Total Acceptable Material	**78.0%**	**77.3%**	**80.0%**	**75.7%**	**67.8%**	**72.0%**
Total Unacceptable Material	**22.0%**	**22.7%**	**20.0%**	**24.3%**	**32.2%**	**28.0%**
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Load Weights (tons)	1.45	1.13	0.37	0.71	0.42	0.31

Note: Columns may not appear to sum correctly due to rounding.

Table B-2: Individual Collection Center Sample Results (% by Weight)

Material Categories	County: Collection Center - Mon 10/26, Curlew (Sample #126)	County: Collection Center - Mon 10/26, Hamlin (Sample #127)	County: Collection Center - Mon 10/26, John Chesnut (Sample #128)	County: Collection Center - Mon 10/26, Lake Seminole (Sample #129)	County: Collection Center - Mon 10/26, AL Anderson (Sample #132)	County: Collection Center - Tue 10/27, Walmart (Sample #133)	County: Collection Center - Tue 10/27, Dunn (Sample #134)
Newspaper	3.1%	6.2%	7.2%	3.6%	8.8%	33.2%	33.8%
Corrugated Cardboard	17.0%	21.5%	24.6%	21.2%	9.0%	12.7%	7.5%
Magazines and Catalogs	9.9%	2.8%	7.5%	1.0%	6.1%	2.1%	39.1%
Mixed Recyclable Paper	15.6%	14.5%	12.3%	10.3%	19.7%	13.3%	7.5%
Aseptic Containers/Cartons	1.0%	0.5%	0.0%	0.9%	0.6%	0.4%	0.3%
Recyclable Paper	**46.6%**	**45.5%**	**51.6%**	**36.9%**	**44.3%**	**61.8%**	**88.1%**
PET Bottles (#1)	6.7%	4.8%	0.0%	7.3%	6.5%	7.1%	3.6%
Natural HDPE Bottles (#2)	1.8%	1.2%	0.5%	2.1%	0.8%	1.8%	0.4%
Colored HDPE Bottles (#2)	1.6%	1.4%	0.9%	0.3%	1.3%	2.1%	0.7%
Non-Bottle PET Containers (#1)	1.9%	0.4%	0.8%	1.2%	1.3%	1.5%	0.7%
Non-Bottle HDPE Containers (#2)	0.2%	0.3%	0.0%	0.2%	0.0%	0.2%	0.0%
PP Containers (#5)	0.6%	0.8%	0.6%	0.6%	0.6%	0.9%	0.4%
Other Plastic Containers (#3,4,6,7)	0.1%	0.3%	0.2%	0.6%	0.3%	0.4%	0.0%
Tin/Steel Cans	2.1%	1.1%	1.0%	1.3%	1.6%	1.8%	0.7%
Aluminum Cans	2.2%	2.7%	1.6%	1.9%	2.1%	2.0%	0.8%
Glass Containers	24.7%	29.2%	39.2%	26.3%	32.7%	12.0%	3.1%
Recyclable Containers	**42.0%**	**42.1%**	**44.7%**	**41.9%**	**47.3%**	**29.8%**	**10.4%**
Bulky Rigid Plastics	1.9%	0.0%	0.0%	3.5%	0.4%	0.0%	0.0%
Ferrous Scrap Metal	1.5%	0.0%	0.0%	4.9%	0.1%	0.2%	0.0%
Aluminum Foil and Trays	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Non-Ferrous Scrap Metal	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%
Other Recyclables	**3.4%**	**0.0%**	**0.0%**	**8.4%**	**1.7%**	**0.3%**	**0.0%**
Wet Corrugated Cardboard	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wet Paper	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Shredded Paper	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Film-Wrapped Paper	0.0%	0.2%	0.0%	0.0%	0.3%	0.1%	0.0%
Bagged Recyclables	0.0%	2.2%	0.0%	0.0%	2.0%	3.1%	0.0%
Full Containers	0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.2%
Potential Recyclables	**0.0%**	**4.9%**	**0.2%**	**0.0%**	**2.3%**	**3.3%**	**0.2%**
EPS Foam	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%
Non-Rigid Plastic Film	0.4%	0.1%	0.3%	0.1%	0.4%	0.4%	0.1%
Bagged Waste	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Tanglers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Small Appliances	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous/Special Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-Alkaline Batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Yard Waste	0.0%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%
Other Contaminants	6.8%	6.6%	2.7%	7.2%	2.4%	3.8%	0.9%
Grit	0.8%	0.4%	0.5%	2.8%	1.6%	0.6%	0.3%
Contaminants	**8.0%**	**7.4%**	**3.5%**	**12.8%**	**4.4%**	**4.8%**	**1.3%**
Total Acceptable Material	**92.0%**	**87.7%**	**96.3%**	**87.2%**	**93.2%**	**91.9%**	**98.6%**
Total Unacceptable Material	**8.0%**	**12.3%**	**3.7%**	**12.8%**	**6.8%**	**8.1%**	**1.4%**
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Load Weights (tons)	0.03	0.83	0.84	0.93	0.84	1.00	1.32

Note: Columns may not appear to sum correctly due to rounding.

Table B-2: Individual Collection Center Sample Results (% by Weight) (cont.)

Material Categories	County: Collection Center - Tue 10/27, Solid Waste (Sample #136)	County: Collection Center - Wed 10/28, Bank of America (Sample #138)	County: Collection Center - Wed 10/28, N. Co Gov Center (Sample #139)	County: Collection Center - Thu 10/29, Extension (Sample #143)	County: Collection Center - Thu 10/29, Ft Desoto Camp (Sample #144)	County: Collection Center - Fri 10/30, Brooker Creek (Sample #150)	County: Collection Center - Fri 10/30, Sand Key (Sample #152)
Newspaper	2.9%	9.4%	2.3%	10.4%	5.6%	7.1%	5.6%
Corrugated Cardboard	8.1%	17.2%	23.1%	10.3%	7.0%	16.1%	21.5%
Magazines and Catalogs	4.0%	8.8%	18.0%	10.3%	3.4%	20.1%	3.0%
Mixed Recyclable Paper	14.1%	19.6%	15.2%	24.4%	12.4%	23.6%	17.6%
Aseptic Containers/Cartons	0.4%	0.2%	0.4%	0.2%	0.6%	0.4%	1.1%
Recyclable Paper	**29.6%**	**55.3%**	**59.0%**	**55.6%**	**29.0%**	**67.4%**	**48.8%**
PET Bottles (#1)	6.2%	7.7%	6.2%	6.6%	6.6%	3.1%	7.5%
Natural HDPE Bottles (#2)	1.2%	0.8%	1.5%	0.9%	0.8%	0.7%	0.5%
Colored HDPE Bottles (#2)	1.3%	1.8%	1.6%	1.3%	0.9%	1.0%	1.1%
Non-Bottle PET Containers (#1)	1.5%	0.4%	1.4%	0.9%	0.8%	0.4%	2.4%
Non-Bottle HDPE Containers (#2)	0.4%	0.1%	0.4%	0.1%	0.4%	0.0%	0.0%
PP Containers (#5)	0.6%	0.2%	0.9%	0.8%	0.5%	0.5%	0.7%
Other Plastic Containers (#3,4,6,7)	0.1%	0.2%	0.2%	0.3%	0.2%	0.1%	0.3%
Tin/Steel Cans	3.5%	1.8%	1.8%	1.9%	1.2%	0.8%	2.4%
Aluminum Cans	2.3%	1.9%	1.5%	1.2%	2.4%	1.3%	2.5%
Glass Containers	41.5%	25.3%	18.3%	26.0%	50.1%	22.3%	30.9%
Recyclable Containers	**58.4%**	**40.3%**	**33.7%**	**39.9%**	**63.8%**	**30.1%**	**48.3%**
Bulky Rigid Plastics	4.0%	0.0%	0.8%	0.0%	0.2%	0.0%	0.0%
Ferrous Scrap Metal	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Aluminum Foil and Trays	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%
Non-Ferrous Scrap Metal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Recyclables	**6.5%**	**0.1%**	**0.8%**	**0.0%**	**0.4%**	**0.0%**	**0.1%**
Wet Corrugated Cardboard	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wet Paper	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%
Shredded Paper	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Film-Wrapped Paper	0.0%	0.0%	0.3%	0.1%	0.0%	0.1%	0.0%
Bagged Recyclables	0.0%	1.9%	3.0%	0.0%	2.4%	0.0%	0.0%
Full Containers	0.0%	0.3%	1.4%	0.0%	0.0%	0.0%	0.0%
Potential Recyclables	**0.4%**	**2.2%**	**4.7%**	**0.1%**	**3.4%**	**0.1%**	**0.0%**
EPS Foam	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.5%
Non-Rigid Plastic Film	0.2%	0.1%	0.2%	0.1%	0.5%	0.1%	0.3%
Bagged Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tanglers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Small Appliances	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous/Special Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-Alkaline Batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Yard Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Contaminants	4.6%	1.7%	1.1%	2.8%	2.3%	1.8%	1.9%
Grit	0.3%	0.4%	0.5%	1.4%	0.6%	0.5%	0.0%
Contaminants	**5.2%**	**2.2%**	**1.8%**	**4.4%**	**3.4%**	**2.4%**	**2.8%**
Total Acceptable Material	**94.5%**	**95.6%**	**93.5%**	**95.5%**	**93.2%**	**97.5%**	**97.2%**
Total Unacceptable Material	**5.5%**	**4.4%**	**6.5%**	**4.5%**	**6.8%**	**2.5%**	**2.8%**
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Load Weights (tons)	1.01	0.66	0.65	0.91	0.57	1.48	0.79

Note: Columns may not appear to sum correctly due to rounding.