CHATHAM COUNTY

# FINAL REPORT

## 2021 Waste Composition Study

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PREPARED FOR

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# Section 1
# Introduction

## 1.1 Purpose and Scope

Chatham County (County) contracted with Kessler Consulting, Inc. (KCI) to conduct a Waste Composition Study (WCS) to determine the composition of solid waste received at the County's collection centers.

The WCS consisted of sampling and sorting materials from the County's solid waste compactors and pre-crushers from each of its 12 collection centers. The WCS also included visual audits of bulky wastes collected in open-top roll-offs at the collection centers.

The goal of the WCS was to analyze the materials that are being placed in the waste receptacles to determine if recyclable materials are being disposed properly and evaluate the potential for additional recycling or recovery programs. Results of this WCS will help the County to better focus their education and enforcement efforts. The WCS was also conducted to evaluate changes in the waste stream compared to similar studies conducted in 2017, 2014, and 2011. Comparisons of the results from these previous WCSs are provided herein.

## 1.2 Background

Chatham County operates 12 collection centers that receive household and bulky waste from residents in the unincorporated areas of the County. Each center has a compactor for household waste and one or two bulky waste roll-off containers, and two centers (Cole Park and Pittsboro) have additional pre-crushers for bulky waste.

Each of the collection centers also has receptacles for collecting mixed recyclables, which include the following materials:

- Aluminum cans
- Steel cans
- Mixed paper
- Corrugated cardboard
- Aseptic cartons
- Plastic bottles, jugs, jars, and tubs

In addition to waste and mixed recyclables, each collection center also accepts the following separated materials for recycling:

- Glass containers
- Scrap metal
- Clothing & shoes
- Electronics
- Household batteries
- Oil filters and used motor oil
- Lead acid batteries
- Tires

Yard waste, pallets, and inert debris (brick, concrete, rock, dirt, soil, sand) are also collected separately at the County's Main Facility.

Following the WCS that KCI conducted in 2017, the County launched a construction & demolition (C&D) debris recycling program at four of its collection centers (Goldston, Hadley, Martha's Chapel, and Pittsboro). This program accepts most types of C&D debris except asbestos, brick, and concrete.

## 1.3 Acknowledgements

KCI would like to acknowledge and thank all County staff members who assisted with the planning and logistics of this WCS. KCI would also like to thank Waste Management (WM) and their staff for reopening their transfer station to allow the WCS to be conducted there. The cooperation and positive attitudes of everyone involved were essential to the success of the WCS.

# Section 2
# Methodology

## 2.1 Material Streams

The WCS assessed all waste collected at the County's 12 collection centers. Three material streams (i.e., collection container types) were evaluated during the WCS:

- Waste Compactors (manually sorted)
- Bulky Waste Pre-Crushers (manually sorted)
- Bulky Waste Roll-Offs (visually characterized)

## 2.2 Material Categories

KCI worked with County staff to develop a list of 53 material categories into which the manually sorted waste was placed. KCI worked to define categories that expanded and refined, while maintaining continuity with, those from prior WCSs. The final list of material categories and descriptions is provided in Appendix A.

Similarly, a list of material categories (Appendix B) was used in the visual audit of bulky waste based on commonly found material in bulky waste and C&D debris.

## 2.3 Locations, Equipment and Labor

The three-day sorting event was conducted on March 29-31, 2021. KCI provided a Field Manager, Sorting Supervisor, all sorting equipment, and safety gear. The County provided a loader and operator to gather samples at the direction of KCI's Field Manager. All sort labor was provided by KCI through an agreement with Labor Ready of Greensboro.

KCI prepared and County staff reviewed and approved a Site Safety Plan that was followed throughout the sorting event. KCI worked with County and WM 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 KCI staff to ensure safety and proper sorting. No injuries or emergencies occurred during the sorting event.

## 2.4 Sampling and Sorting Procedures

All sampling and sorting procedures were conducted in accordance with the Sampling and Sorting Protocol developed by KCI and approved by the County before the fieldwork was initiated.

Per the County's direction, all of the compactors and pre-crushers and one bulky waste roll-off at each of the County's 12 collection centers were included in this WCS. In total, 16 samples of waste were manually sorted (one from each the County's 12 compactors and two from each of

the two pre-crushers), and KCI performed visual audits on all 12 bulky waste roll-off loads during the three-day sorting event.

Upon the trucks entering the transfer station, KCI's Field Manager confirmed the collection center location and container type with County staff. Once the materials in each compactor and pre-crusher vehicle were tipped, a representative sample of at least 200 pounds was selected from each load and placed on a tarp, where they were staged until sorted.

Individual samples were transferred onto KCI's custom sorting table where they were hand-sorted into the previously defined material categories using labeled containers of various sizes. Throughout and at the end of the sorting of each sample, KCI staff verified that material within each category's container was correctly sorted. After the entire sample was sorted, KCI staff weighed and recorded the net weights of each material category using a tablet-based data log.

## 2.5 Visual Audit Procedures

Because bulky wastes are not conducive to manual sorting and weighing, KCI visually characterized the waste generated in each of the collection center roll-offs to estimate the composition of incoming bulky wastes.

Upon the trucks entering the transfer station, KCI's Field Manager confirmed the collection center location and container type with County staff. Once tipped, KCI's Field Manager visually divided each load into six equal sections and characterized each section by estimating the percent by volume of identifiable items and materials as listed in Appendix B. These percentages were recorded using a tablet-based data log. Detailed photographs were taken of each load and are included in Appendix E.

## 2.6 Analytical Procedures

After the sorting event, KCI calculated the weighted average of each material category to obtain the composition of compactor waste, pre-crusher waste, and bulky waste. The average composition was weighted by the net load weight (or volume for bulky waste roll-offs) of each load to ensure the composition is more representative of the overall stream. For example, a heavier load would contribute more to the overall stream than a lighter load, therefore it would be weighted more in the 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)*. Where appropriate, a 90 percent confidence interval was calculated, using a standard statistical t-distribution table, for each material category in the composition.

To assist the County in further quantifying the bulky waste stream, KCI applied industry-accepted conversion factors to convert the visual audit results (percent by volume) into percent by weight.

# Section 3
# Results

## 3.1 Introduction to Results

The composition of each waste stream measured in the WCS is presented in this section. All results are expressed in percentage by weight or volume (bulky waste visual audits). The percentages included in the tables and figures are the weighted average values for each material category. For compactor waste and bulky waste visual audits, the results also provide a 90 percent confidence interval for each material category.[1] Because of the limited amount of pre-crusher waste to sample, a confidence interval for this waste stream would not be appropriate.

For the purposes of discussion and analysis, hand sorted materials (compactor and pre-crusher waste) were grouped into six broad categories based on diversion potential, as outlined below. Bulky waste was grouped as indicated in Appendix B.

- Recyclable Paper: Paper materials that are currently accepted in the County's mixed recycling collection containers at its collection centers.
    - Newspaper
    - Corrugated Cardboard
    - Mixed Recyclable Paper
    - Aseptic/Polycoated Containers
- Recyclable Containers: Plastic and metal containers that are accepted in the County's mixed collection containers at its collection centers. This also includes Glass Containers accepted at the collection centers in separate collection containers.
    - PET Bottles (#1)
    - HDPE Bottles (#2)
    - Other Narrow-Neck Bottles
    - Plastic Tubs
    - Tin/Steel Cans
    - Aluminum Cans
    - Nonhazardous Aerosol Cans
    - Glass Containers
- Other Accepted Recyclable Materials: Other materials that are separately accepted for recycling at the County's collection centers and/or the Main Facility.
    - Ferrous Scrap Metals
    - Non-Ferrous Scrap Metals
    - Textiles/Leather
    - Carpet
    - Oil Filters
    - Lead-Acid Batteries
    - Computers
    - Televisions
    - Household Batteries
    - Clean Wood Waste
    - Treated Wood Waste
    - Pallets
    - Brick and Concrete
    - Other Accepted C&D Debris
    - Tires and Rubber

[1] The confidence interval indicates that with a 90 percent level of confidence the actual arithmetic mean is within the upper and lower limits shown. 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 confidence interval. Because this is a statistical analysis, the lower end of the confidence interval may be a negative number.

- Potentially Compostable Materials: Materials that potentially could be composted in a commercial composting facility if properly source-separated and/or processed.
    - Compostable Paper
    - Food Waste
    - Yard Waste
- Other Potentially Recoverable Materials: Materials that have the potential to be recycled but are not currently collected for recycling at the County's collection centers or Main Facility, due to market or local processing limitations.
    - Bagged Shredded Paper
    - Bulky Rigid Plastics
    - Plastic Drink Cups
    - Expanded Polystyrene (EPS) Foam
    - Plastic Clamshells
    - Aluminum Foil and Trays
    - Plastic Bottles That Held Toxics
    - Other E-Waste and Technotrash
    - Other Plastic Containers
    - Mattresses
- All Other Materials: Other materials not classified above.
    - All Other Paper
    - Non-Rigid Plastic Film
    - All Other Plastics
    - Small Appliances
    - Other Glass
    - Other Special Wastes
    - Unaccepted C&D Debris
    - Furniture
    - Pet Waste
    - Diapers
    - Composite Materials
    - Liquids
    - Grit

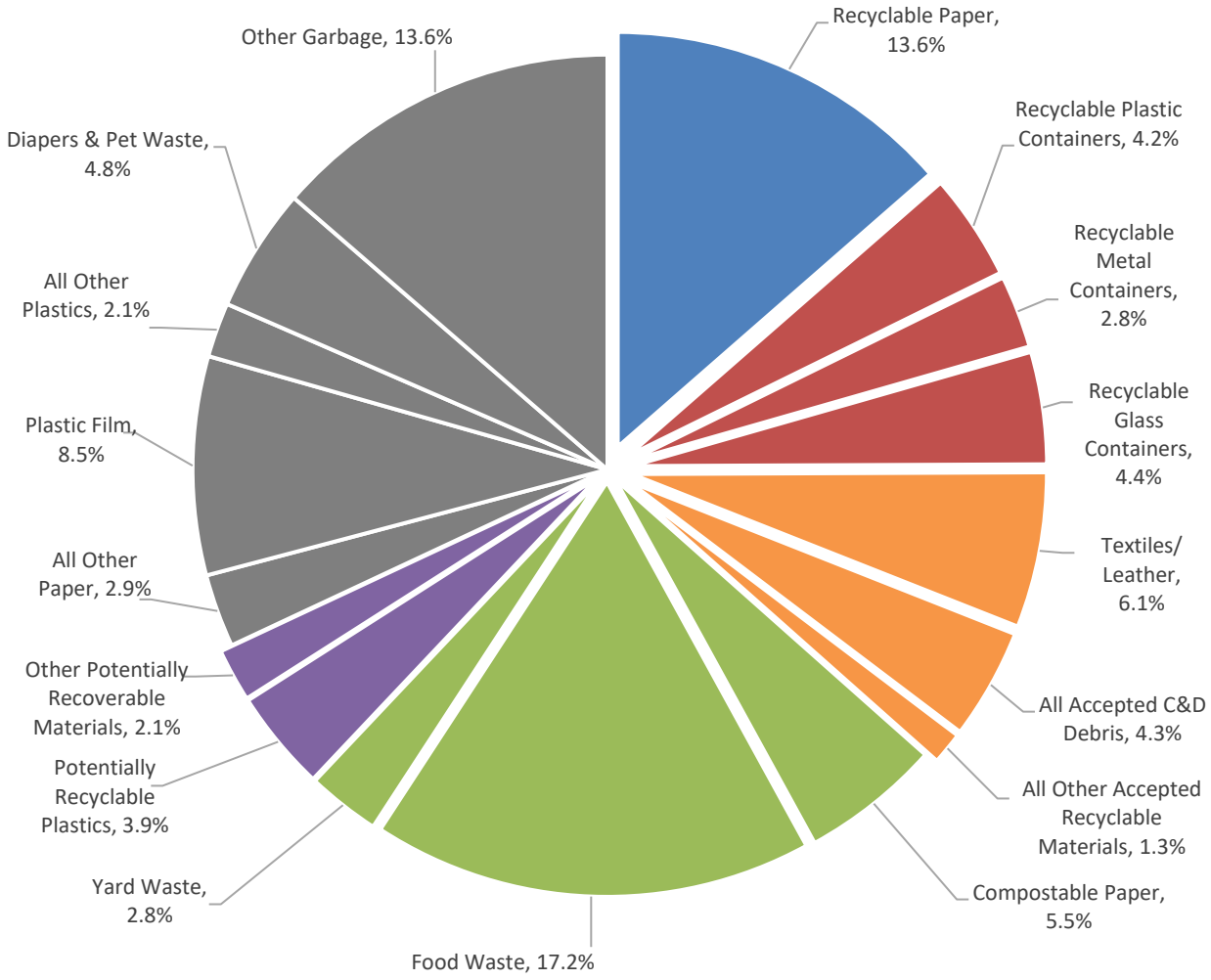
## 3.2 Compactor Waste

Figure 3-1 depicts the weighted average composition of compactor waste. Table 3-1 shows the detailed weighted average composition of compactor waste with a 90 percent confidence interval and compares the results to the previous WCSs. Individual sample data for the compactor samples can be found in Appendix C.

Key findings from the compactor waste composition data include:

- Almost 14 percent of the compactor waste was recyclable paper. The vast majority of this was mixed recyclable paper. Overall, the percentage of recyclable paper was lower than in previous WCSs, due to lower average percentages of cardboard and newspaper. In fact, newspaper was negligible in the compactor waste.
- Recyclable containers comprised about 11 percent of the stream, more than half of which were glass containers and PET bottles. The average percentage of recyclable containers was slightly higher than in 2017 but lower than in 2014 and 2011.
- Nearly 12 percent of the stream was other recyclable materials accepted at the collection centers and/or Main Facility. Textiles comprised over half of this, which was higher than in 2017 and 2014. C&D debris was about 4 percent of the stream.
- Potentially compostable materials comprised about a quarter of the stream. Food waste was the primary component, in fact food waste had the highest percentage of any individual material, as was the case in previous WCSs. It should be noted that while compostable paper appeared to drop since previous WCSs, those studies did not separate compostable paper from all other paper (previously called low grade paper, collectively).
- Other potentially recoverable materials comprised about 6 percent of the stream. Potentially recyclable plastics, which are not currently accepted in the County's program, was about half of this.
- About a third of the compactor waste stream was all other materials, which is an increase from previous WCSs. Composite materials and plastic film were the largest categories in this group. While some of the plastic film, such as shopping bags, are potentially recyclable, the majority of the weight in this category was from garbage bags.

## Figure 3-1: Composition of Compactor Waste




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

- Recyclable Paper includes the categories of Newspaper, Corrugated Cardboard, Mixed Recyclable Paper, and Aseptic/Polycoated Containers.
- Recyclable Plastic Containers includes the categories of PET Bottles (#1), HDPE Bottles (#2), Other Narrow-Neck Bottles, and Plastic Tubs.
- Recyclable Metal Containers includes the categories of Tin/Steel Cans, Aluminum Cans, and Nonhazardous Aerosol Cans.
- All Accepted C&D Debris includes the categories of Carpet, Clean Wood Waste, Treated Wood Waste, Pallets, Brick and Concrete, and Other Accepted C&D Debris
- All Other Accepted Recyclable Materials includes the categories of Ferrous Scrap Metals, Non-Ferrous Scrap Metals, Oil Filters, Lead-Acid Batteries, Computers, Televisions, Household Batteries, and Tires and Rubber.
- Potentially Recyclable Plastics includes the categories of Plastic Drink Cups, Plastic Clamshells, Plastic Bottles That Held Toxics, Other Plastic Containers, and Expanded Polystyrene Foam.
- Other Potentially Recoverable Materials includes the categories of Bagged Shredded Paper, Aluminum Foil and Trays, Other E-Waste and Technotrash, Furniture, and Mattresses.
- Other Garbage includes the categories of Small Appliances, Other Glass, Other Special Wastes, Unaccepted C&D Debris, Composite Materials, Liquids, and Grit.

## Table 3-1: Composition of Compactor Waste and Comparison to Previous WCSs

| Material Category | 2021 Weighted Average | 90% Confidence Interval | | 2017 | 2014 | 2011 |
|---|---|---|---|---|---|---|
| | | Lower Bounds | Upper Bounds | | | |
| Newspaper | 0.2% | 0.1% | 0.4% | 2.3% | 3.4% | 3.1% |
| Corrugated Cardboard | 2.6% | 1.8% | 3.5% | 3.8% | 4.3% | 1.5% |
| Mixed Recyclable Paper | 10.4% | 8.0% | 12.8% | 9.8% | 14.5% | 15.0% |
| Aseptic/Polycoated Containers | 0.3% | 0.2% | 0.4% | 0.3% | 0.3% | 0.3% |
| **Recyclable Paper** | **13.6%** | **11.3%** | **15.9%** | **16.2%** | **22.5%** | **19.9%** |
| PET Bottles (#1) | 2.6% | 1.8% | 3.4% | 2.3% | 2.2% | 3.4% |
| HDPE Bottles (#2) | 1.1% | 0.8% | 1.5% | 1.2% | 1.1% | 1.7% |
| Other Narrow-Neck Bottles | 0.1% | 0.0% | 0.2% | 0.1% | 0.5% | 1.0% |
| Plastic Tubs | 0.3% | 0.2% | 0.5% | 0.6% | 0.8% | 1.1% |
| Tin/Steel Cans | 1.2% | 0.8% | 1.6% | 1.5% | 1.6% | 1.4% |
| Aluminum Cans | 1.2% | 0.7% | 1.7% | 0.8% | 0.9% | 0.8% |
| Nonhazardous Aerosol Cans | 0.4% | 0.1% | 0.7% | 0.4% | 0.4% | 0.6% |
| Glass Containers | 4.4% | 2.2% | 6.5% | 3.3% | 6.1% | 4.5% |
| **Recyclable Containers** | **11.4%** | **7.6%** | **15.1%** | **10.3%** | **13.6%** | **14.5%** |
| Ferrous Scrap Metals | 0.8% | 0.1% | 1.4% | 0.6% | 0.5% | 1.1% |
| Non-Ferrous Scrap Metals | 0.3% | 0.1% | 0.6% | 0.6% | 0.7% | 0.2% |
| Textiles/Leather | 6.1% | 3.2% | 8.9% | 4.3% | 3.8% | 6.6% |
| Carpet | 0.6% | -0.4% | 1.5% | 0.4% | 1.4% | 0.0% |
| Oil Filters | 0.1% | 0.0% | 0.2% | 0.3% | 0.0% | 0.3% |
| Lead-Acid Batteries | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Computers | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Televisions | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Household Batteries | 0.1% | 0.0% | 0.1% | 0.2% | 0.2% | 0.1% |
| Clean Wood Waste | 1.3% | 0.1% | 2.5% | 0.4% | 1.3% | 1.0% |
| Treated Wood Waste | 1.1% | 0.0% | 2.2% | 2.1% | 0.8% | 0.0% |
| Pallets | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Brick and Concrete | 0.6% | -0.4% | 1.5% | 0.1% | 0.1% | 0.1% |
| Other Accepted C&D Debris | 0.8% | -0.2% | 1.8% | 1.9% | 1.0% | 0.2% |
| Tires and Rubber | 0.0% | 0.0% | 0.1% | 0.7% | 0.1% | 0.1% |
| **Other Accepted Recyclable Materials** | **11.6%** | **9.7%** | **13.6%** | **11.5%** | **9.8%** | **9.7%** |
| Compostable Paper | 5.5% | 4.4% | 6.5% | 9.2% | 9.4% | 8.8% |
| Yard Waste | 2.8% | 1.1% | 4.6% | 1.0% | 0.1% | 1.1% |
| Food Waste | 17.2% | 13.4% | 20.9% | 17.2% | 16.6% | 14.5% |
| **Potentially Compostable Materials** | **25.5%** | **22.0%** | **28.9%** | **27.3%** | **26.1%** | **24.4%** |

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

### Table 3-1: Composition of Compactor Waste and Comparison to Previous WCSs (continued)

| Material Category | 2021 Weighted Average | 90% Confidence Interval | | 2017 | 2014 | 2011 |
|---|---|---|---|---|---|---|
| | | Lower Bounds | Upper Bounds | | | |
| Bagged Shredded Paper | 0.0% | 0.0% | 0.1% | 0.0% | n/a | n/a |
| Plastic Drink Cups | 0.4% | 0.2% | 0.5% | 0.3% | 0.7% | 0.3% |
| Plastic Clamshells | 0.3% | 0.1% | 0.4% | | | |
| Plastic Bottles That Held Toxics | 0.2% | 0.0% | 0.4% | 0.2% | 0.2% | 0.2% |
| Other Plastic Containers | 0.4% | 0.3% | 0.6% | n/a | n/a | n/a |
| Bulky Rigid Plastics | 1.5% | 0.3% | 2.6% | 1.6% | 2.2% | 3.3% |
| Expanded Polystyrene (EPS) Foam | 1.2% | 0.8% | 1.6% | 1.4% | 1.2% | 2.1% |
| Aluminum Foil and Trays | 0.5% | 0.4% | 0.6% | n/a | n/a | 0.5% |
| Other E-Waste and Technotrash | 1.5% | 0.2% | 2.9% | 0.6% | 1.6% | 0.5% |
| Mattresses | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| **Other Potentially Recoverable Materials** | **6.0%** | **2.8%** | **9.2%** | **4.1%** | **6.8%** | **6.9%** |
| All Other Paper | 2.9% | 2.3% | 3.5% | n/a | n/a | 0.0% |
| Non-Rigid Plastic Film | 8.5% | 5.7% | 11.4% | 7.9% | 5.7% | 9.3% |
| All Other Plastics | 2.1% | 1.3% | 2.9% | 2.7% | 1.5% | n/a |
| Small Appliances | 0.4% | 0.1% | 0.8% | 0.0% | 0.1% | 0.5% |
| Other Glass | 0.5% | 0.2% | 0.9% | 1.1% | 0.8% | 0.3% |
| Other Special Wastes | 0.5% | -0.1% | 1.0% | 0.4% | 0.1% | 0.0% |
| Unaccepted C&D Debris | 0.6% | -0.4% | 1.6% | n/a | n/a | n/a |
| Furniture | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.5% |
| Pet Waste | 2.2% | 0.0% | 4.4% | 6.1% | 9.4% | 7.1% |
| Diapers | 2.6% | 1.2% | 4.1% | 3.9% | | 3.3% |
| Composite Materials | 9.0% | 6.1% | 11.8% | 6.8% | | n/a |
| Liquids | 1.4% | 0.8% | 2.0% | 1.0% | 0.7% | n/a |
| Grit | 1.2% | -0.4% | 2.8% | 0.8% | 2.8% | 3.1% |
| **All Other Materials** | **32.0%** | **28.5%** | **35.4%** | **30.7%** | **22.0%** | **24.1%** |
| **Total** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

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

## 3.3 Collection Center Pre-Crusher Bulky Waste

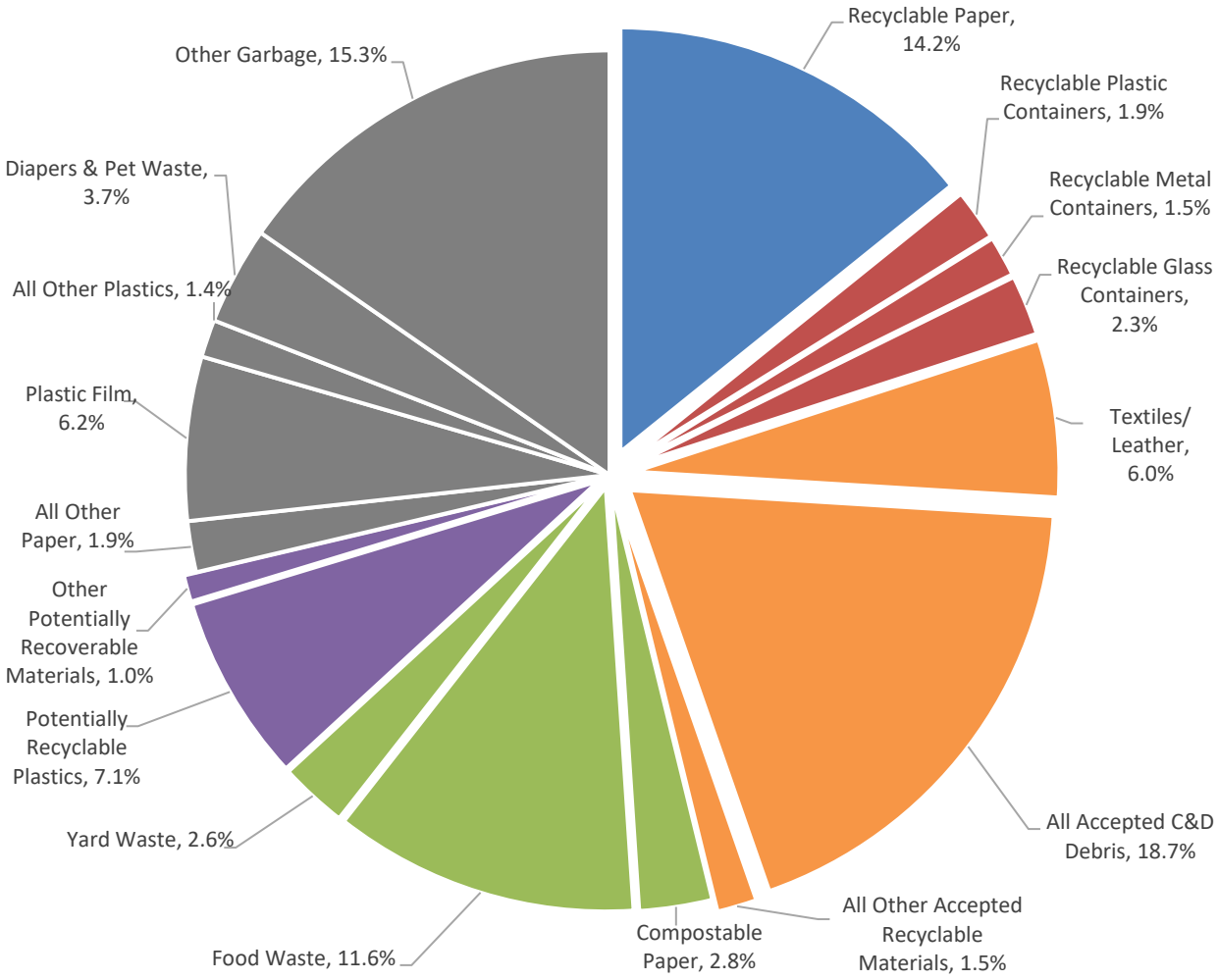
Figure 3-2 depicts the weighted average composition of pre-crusher bulky waste. Table 3-2 shows the detailed weighted average composition of pre-crusher bulky waste, as well as compares the results to the previous WCSs. Individual sample data for the pre-crusher samples can be found in Appendix C.

It should be noted that this composition only represents two loads of pre-crusher material and caution should be taken when drawing conclusions from these results. In 2021, two samples were pulled from each load to increase reliability; however, in 2017, 2014, and 2011, only one sample was pulled from each load.

Key findings from the pre-crusher bulky waste composition data include:

- Observationally, the two loads of pre-crusher bulky waste had a high amount of bagged household waste, higher than in 2017, which led to the composition being more similar to the compactor waste than typical bulky waste.
- Recyclable paper comprised about 14 percent of the stream. Although corrugated cardboard was lower than in 2017, mixed recyclable paper was higher. The 2021 composition was more similar to 2014 and 2011 but with a lower percentage of newspaper.
- Nearly 6 percent of the stream was recyclable containers, about half of which was glass containers and PET bottles. Recyclable containers percentage was higher than in 2017 and 2011 but was about half the percentage of what was in 2014.
- About 26 percent of the stream was other materials accepted at the collection centers or Main Facility. This was primarily C&D debris that is accepted in the County's C&D recycling program. In fact, the average percentage of C&D debris in the Pittsboro samples, where C&D recycling is in place, was about half of the percentages in the Cole Park samples, where C&D recycling is not in place. C&D debris was much lower in the pre-crusher samples than in previous WCSs. Textiles was another significant accepted recyclable material.
- Potentially compostable materials comprised about 17 of the pre-crusher waste, which was mostly food waste. Food waste was much higher than in previous WCSs, likely due to the presence of more household waste in the stream.
- Other potentially recoverable materials comprised about 9 percent of the stream. Bulky rigid plastics were the majority of these. This was lower than 2017, which had a high percentage of mattresses, was about the same as 2014, and was higher than 2011.
- All other materials comprised nearly 29 percent of the stream, higher than previous WCSs. Non-rigid plastic film was a major component of this, due to the high amount of bagged household waste. The percentage of small appliances was also high due to a large vacuum and humidifier in one of the samples.

## Figure 3-2: Composition of Pre-Crusher Waste




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

- Recyclable Paper includes the categories of Newspaper, Corrugated Cardboard, Mixed Recyclable Paper, and Aseptic/Polycoated Containers.
- Recyclable Plastic Containers includes the categories of PET Bottles (#1), HDPE Bottles (#2), Other Narrow-Neck Bottles, and Plastic Tubs.
- Recyclable Metal Containers includes the categories of Tin/Steel Cans, Aluminum Cans, and Nonhazardous Aerosol Cans.
- All Accepted C&D Debris includes the categories of Carpet, Clean Wood Waste, Treated Wood Waste, Pallets, Brick and Concrete, and Other Accepted C&D Debris
- All Other Accepted Recyclable Materials includes the categories of Ferrous Scrap Metals, Non-Ferrous Scrap Metals, Oil Filters, Lead-Acid Batteries, Computers, Televisions, Household Batteries, and Tires and Rubber.
- Potentially Recyclable Plastics includes the categories of Plastic Drink Cups, Plastic Clamshells, Plastic Bottles That Held Toxics, Other Plastic Containers, and Expanded Polystyrene Foam.
- Other Potentially Recoverable Materials includes the categories of Bagged Shredded Paper, Aluminum Foil and Trays, Other E-Waste and Technotrash, Furniture, and Mattresses.
- Other Garbage includes the categories of Small Appliances, Other Glass, Other Special Wastes, Unaccepted C&D Debris, Composite Materials, Liquids, and Grit.

### Table 3-2: Comparison of Pre-Crusher Waste Composition to Previous WCSs

| Material Category | 2021 Weighted Average | 2017 | 2014 | 2011 |
|---|---|---|---|---|
| Newspaper | 1.3% | 0.3% | 4.0% | 3.1% |
| Corrugated Cardboard | 4.5% | 8.3% | 3.2% | 2.5% |
| Mixed Recyclable Paper | 8.1% | 2.6% | 7.6% | 5.9% |
| Aseptic/Polycoated Containers | 0.2% | 0.3% | 0.3% | 0.0% |
| **Recyclable Paper** | **14.2%** | **11.5%** | **15.1%** | **11.5%** |
| PET Bottles (#1) | 1.0% | 0.6% | 1.0% | 1.6% |
| HDPE Bottles (#2) | 0.6% | 0.2% | 1.7% | 0.4% |
| Other Narrow-Neck Bottles | 0.0% | 0.0% | 0.5% | 0.0% |
| Plastic Tubs | 0.4% | 0.3% | 0.5% | 0.2% |
| Tin/Steel Cans | 0.9% | 0.6% | 1.7% | 0.5% |
| Aluminum Cans | 0.4% | 0.3% | 1.1% | 0.3% |
| Nonhazardous Aerosol Cans | 0.2% | 0.3% | 1.0% | 0.0% |
| Glass Containers | 2.3% | 0.1% | 4.1% | 0.4% |
| **Recyclable Containers** | **5.8%** | **2.4%** | **11.7%** | **3.4%** |
| Ferrous Scrap Metals | 1.3% | 0.5% | 2.7% | 0.3% |
| Non-Ferrous Scrap Metals | 0.1% | 0.3% | 0.3% | 0.0% |
| Textiles/Leather | 6.0% | 8.4% | 5.1% | 2.7% |
| Carpet | 1.2% | 0.0% | 3.2% | 0.0% |
| Oil Filters | 0.0% | 0.0% | 0.0% | 0.2% |
| Lead-Acid Batteries | 0.0% | 0.0% | 0.0% | 0.0% |
| Computers | 0.0% | 0.0% | 0.0% | 1.5% |
| Televisions | 0.0% | 0.0% | 0.0% | 0.0% |
| Household Batteries | 0.0% | 0.0% | 0.0% | 0.0% |
| Clean Wood Waste | 5.5% | 1.6% | 9.4% | 17.8% |
| Treated Wood Waste | 6.3% | 25.2% | 9.8% | 20.0% |
| Pallets | 0.0% | 0.0% | 1.3% | 0.0% |
| Brick and Concrete | 0.0% | 0.0% | 0.0% | 1.7% |
| Other Accepted C&D Debris | 5.7% | 1.5% | 2.0% | 2.1% |
| Tires and Rubber | 0.0% | 2.0% | 0.0% | 1.6% |
| **Other Accepted Recyclable Materials** | **26.2%** | **39.6%** | **33.7%** | **47.9%** |
| Compostable Paper | 2.8% | 5.5% | 8.4% | 2.8% |
| Yard Waste | 2.6% | 4.5% | 0.0% | 1.2% |
| Food Waste | 11.6% | 5.9% | 6.3% | 6.7% |
| **Potentially Compostable Materials** | **17.0%** | **15.9%** | **14.7%** | **10.7%** |

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

### Table 3-2: Comparison of Pre-Crusher Waste Composition to Previous WCSs (continued)

| Material Category | 2021 Weighted Average | 2017 | 2014 | 2011 |
|---|---|---|---|---|
| Bagged Shredded Paper | 0.0% | 0.1% | n/a | n/a |
| Plastic Drink Cups | 0.0% | 0.2% | 0.2% | 0.0% |
| Plastic Clamshells | 0.1% | | | |
| Plastic Bottles That Held Toxics | 0.0% | 0.1% | 0.6% | 0.4% |
| Other Plastic Containers | 0.4% | n/a | n/a | n/a |
| Bulky Rigid Plastics | 5.5% | 3.4% | 2.4% | 2.5% |
| Expanded Polystyrene (EPS) Foam | 1.0% | 0.7% | 1.7% | 0.5% |
| Aluminum Foil and Trays | 0.2% | n/a | n/a | 0.4% |
| Other E-Waste and Technotrash | 0.8% | 1.6% | 3.7% | 0.0% |
| Mattresses | 0.0% | 7.2% | 0.0% | 0.0% |
| **Other Potentially Recoverable Materials** | **9.2%** | **13.2%** | **8.6%** | **3.8%** |
| All Other Paper | 1.9% | n/a | n/a | 0.0% |
| Non-Rigid Plastic Film | 6.2% | 3.5% | 5.4% | 3.2% |
| All Other Plastics | 1.4% | 1.3% | 0.7% | n/a |
| Small Appliances | 4.0% | 0.0% | 2.9% | 0.0% |
| Other Glass | 0.6% | 0.4% | 0.0% | 0.0% |
| Other Special Wastes | 0.0% | 0.4% | 0.0% | 0.0% |
| Unaccepted C&D Debris | 0.5% | n/a | n/a | n/a |
| Furniture | 1.0% | 0.0% | 0.0% | 3.7% |
| Pet Waste | 3.6% | 4.3% | 1.8% | 7.7% |
| Diapers | 0.2% | 0.2% | | 4.1% |
| Composite Materials | 5.1% | 5.8% | | n/a |
| Liquids | 0.2% | 0.0% | 0.0% | n/a |
| Grit | 3.8% | 1.6% | 5.3% | 3.9% |
| **All Other Materials** | **28.7%** | **17.4%** | **16.1%** | **22.6%** |
| **Total** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

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

## 3.4 Bulky Waste Visual Audit

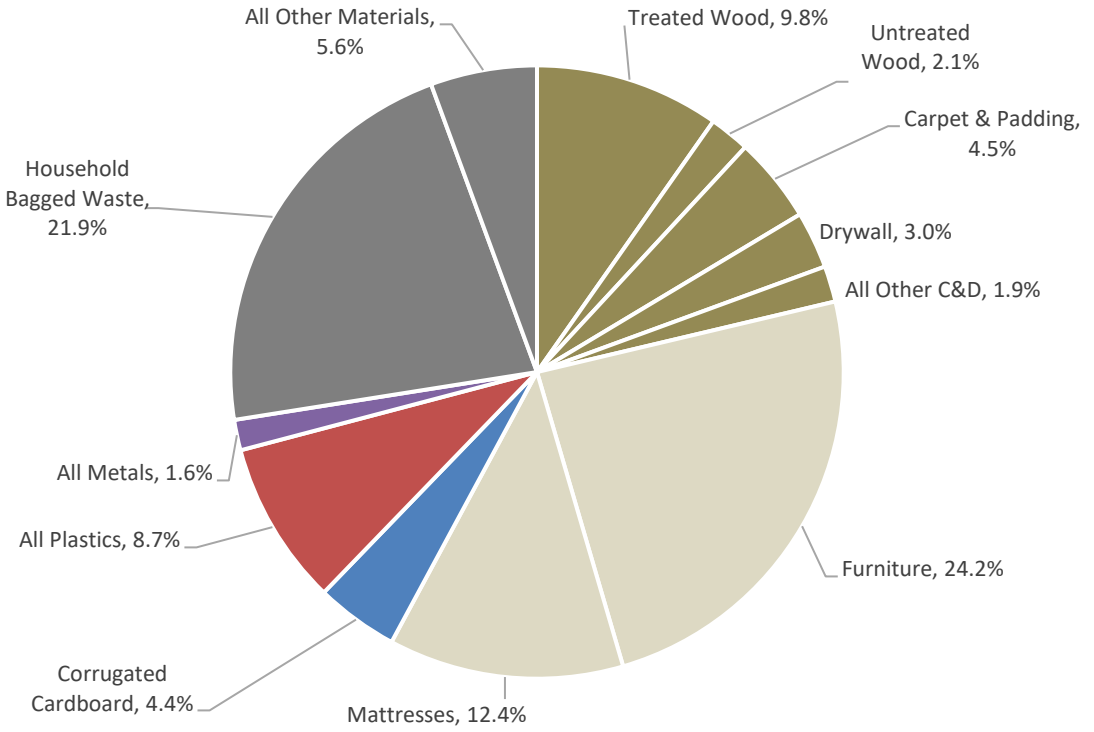
Figures 3-3 and 3-4 depict the composition of bulky waste by volume and by weight, respectively. Table 3-4 presents the composition of bulky waste as precent by volume with a 90 percent confidence interval and the conversion factors used to convert to percent by weight. Table 3-5 compares these results with the previous WCSs. Individual load data for the bulk waste audits can be found in Appendix D. Photographs of each bulky waste load can be found in Appendix E.

Caution is advised when using quantified data from visual audits. While KCI strives to be as accurate and consistent as possible with these audits, they are nevertheless limited based on what could be observed during the audit. Also, the types and quantities of materials within bulky waste can change dramatically from day to day. Furthermore, applying a standard industry density to calculate the percent by weight has its own inherent inaccuracies and it does not necessarily represent the bulk density of the material observed during the audit.

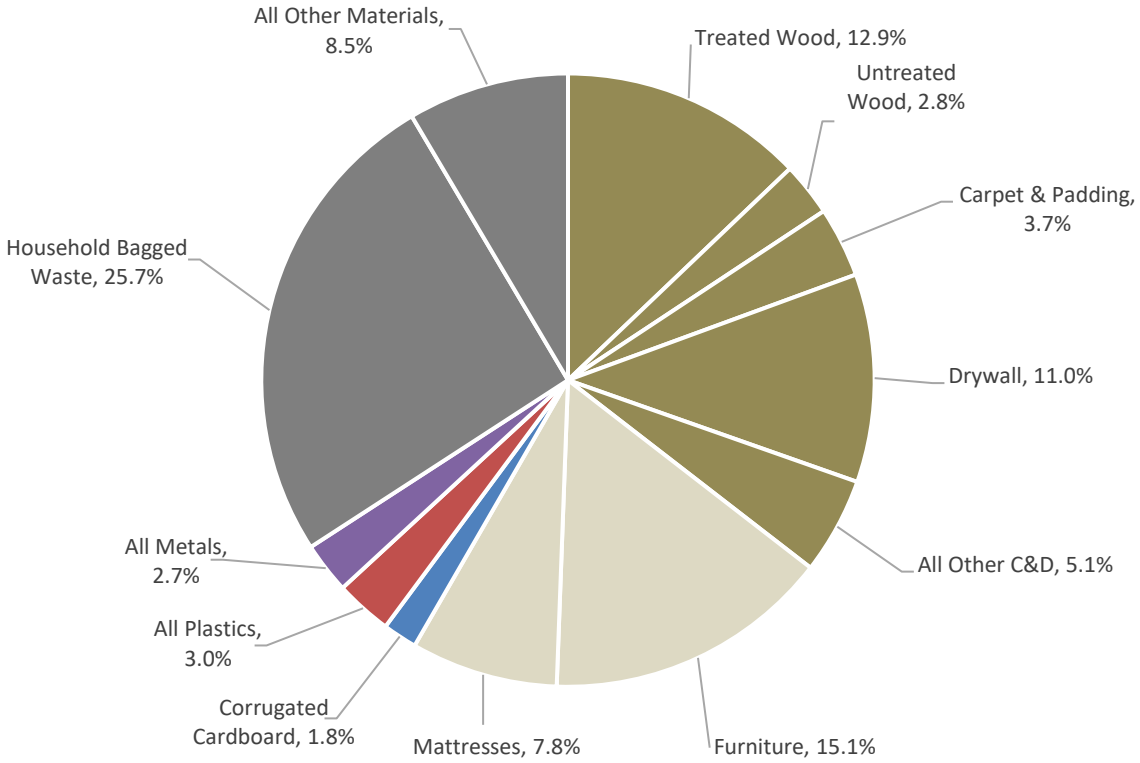
Key observations from the bulky waste visual audits include:

- About 20 percent by volume (36 percent by weight) of the bulky waste was C&D debris. This was lower than in both 2017 and 2014, although closer to 2011. The majority of this was treated wood, carpet and padding, and drywall. Other C&D included items like toilets, sinks, blinds, and closet doors. Three of the four collection centers with C&D recycling had much lower than average percentages of C&D debris, although the fourth (Martha's Chapel) was much higher than average (36.7 percent).
- Furniture and mattresses comprised about 37 percent by volume (23 percent by weight) of the bulky waste stream. This was similar to 2017 but higher than 2014 and 2011.
- While televisions and e-waste represented a small percentage of the overall stream, a number of these items were found in the bulky waste.
- Bagged household waste was another major component of the bulky waste, representing 22 percent by volume and 26 percent by weight. This was also similar to 2017 and higher than 2014. The 2011 WCS did not report any bagged household waste.
- Corrugated cardboard and rigid plastics comprised a combined 10 percent by volume (4 percent by weight). Both are similar to previous WCSs.

## Figure 3-3: Composition of Bulky Waste (percent by volume)




## Figure 3-4: Composition of Bulky Waste (percent by weight)



## Table 3-4: Composition of Bulky Waste

| Material Category | Weighted Average (% by volume) | 90% Confidence Interval | | Average Density (lbs/cy) | Weighted Average (% by weight) |
|---|---|---|---|---|---|
| | | Lower Bounds | Upper Bounds | | |
| Treated Wood | **9.8%** | 4.7% | 14.8% | 169 | **12.9%** |
| Untreated Wood | **2.1%** | -0.3% | 4.6% | 169 | **2.8%** |
| Carpet & Padding | **4.5%** | 1.6% | 7.5% | 105 | **3.7%** |
| Drywall | **3.0%** | -0.2% | 6.2% | 467 | **11.0%** |
| Asphalt Paving | **0.0%** | 0.0% | 0.0% | 773 | **0.0%** |
| Roofing Shingles | **0.1%** | -0.1% | 0.4% | 731 | **0.7%** |
| Fiberglass - insulation | **0.0%** | 0.0% | 0.0% | 17 | **0.0%** |
| Fiberglass - rigid | **0.1%** | -0.1% | 0.4% | 50 | **0.0%** |
| Rock, Concrete and Grit | **0.0%** | 0.0% | 0.0% | 860 | **0.0%** |
| Other C&D | **1.2%** | 0.3% | 2.0% | 417 | **3.8%** |
| Bagged C&D Debris | **0.5%** | 0.1% | 0.9% | 150 | **0.6%** |
| **Total C&D Debris** | **21.3%** | **11.7%** | **30.9%** | | **35.5%** |
| Furniture | **24.2%** | 16.9% | 31.4% | 80 | **15.1%** |
| Mattresses | **12.4%** | 8.1% | 16.7% | 80 | **7.8%** |
| **Total Furniture** | **36.6%** | **30.8%** | **42.3%** | | **22.9%** |
| Corrugated Cardboard | **4.4%** | 2.8% | 6.0% | 53 | **1.8%** |
| Other Paper | **0.5%** | 0.0% | 1.0% | 323 | **1.2%** |
| **Total Paper** | **4.8%** | **3.1%** | **6.5%** | | **3.0%** |
| Film | **1.0%** | 0.2% | 1.7% | 35 | **0.3%** |
| Polystyrene Foam | **1.9%** | -1.3% | 5.1% | 32 | **0.5%** |
| Rigid Plastics | **5.5%** | 3.6% | 7.5% | 50 | **2.2%** |
| PVC Pipe | **0.2%** | 0.0% | 0.5% | 50 | **0.1%** |
| **Total Plastics** | **8.7%** | **5.0%** | **12.4%** | | **3.0%** |
| Major Appliances | **0.2%** | 0.0% | 0.5% | 145 | **0.3%** |
| HVAC Ducting | **0.0%** | 0.0% | 0.0% | 47 | **0.0%** |
| Steel Cans | **0.0%** | 0.0% | 0.0% | 150 | **0.0%** |
| Other Ferrous | **1.1%** | 0.5% | 1.8% | 225 | **2.0%** |
| Other Non-Ferrous | **0.2%** | -0.1% | 0.6% | 225 | **0.4%** |
| **Total Metal** | **1.6%** | **1.0%** | **2.2%** | | **2.7%** |
| Glass Containers | **0.0%** | 0.0% | 0.0% | 380 | **0.0%** |
| Paned Glass | **0.0%** | 0.0% | 0.0% | 1400 | **0.0%** |
| **Total Glass** | **0.0%** | **0.0%** | **0.0%** | | **0.0%** |
| Computers | **0.0%** | 0.0% | 0.0% | 354 | **0.0%** |
| Televisions | **0.0%** | 0.0% | 0.0% | 405 | **0.1%** |
| Other E-waste | **0.6%** | 0.2% | 0.9% | 438 | **1.9%** |
| **Total E-Waste** | **0.6%** | **0.2%** | **0.9%** | | **2.0%** |
| Yard Waste | **0.0%** | 0.0% | 0.0% | 250 | **0.0%** |
| Other Organics & Food Waste | **0.0%** | 0.0% | 0.0% | 225 | **0.0%** |
| **Total Organics** | **0.0%** | **0.0%** | **0.0%** | | **0.0%** |
| Hazardous Waste | **0.0%** | 0.0% | 0.0% | 1671 | **0.0%** |
| Tires | **0.0%** | 0.0% | 0.0% | 225 | **0.0%** |
| Textiles | **0.8%** | 0.3% | 1.4% | 150 | **1.0%** |
| Household Bagged Waste | **21.9%** | 11.8% | 32.0% | 150 | **25.7%** |
| Mixed Residue/Loose MSW | **3.7%** | 2.5% | 5.0% | 150 | **4.4%** |
| **Total Other Materials** | **26.5%** | **16.2%** | **36.7%** | | **31.0%** |
| **Total** | **100.0%** | | | | **100.0%** |

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

## Table 3-5: Comparison of Bulky Waste Composition to Previous WCSs

| Material Category | 2021 | | 2017 | | 2014 | | 2014 | |
|---|---|---|---|---|---|---|---|---|
| | Wted Avg (% by vol) | Wted Avg (% by wt) | Wted Avg (% by vol) | Wted Avg (% by wt) | Wted Avg (% by vol) | Wted Avg (% by wt) | Wted Avg (% by vol) | Wted Avg (% by wt) |
| Treated Wood | 9.8% | 12.9% | 16.1% | 13.4% | 16.9% | 20.8% | 3.8% | 3.0% |
| Untreated Wood | 2.1% | 2.8% | 8.0% | 11.6% | 14.6% | 10.4% | 15.4% | 12.1% |
| Carpet & Padding | 4.5% | 3.7% | 4.2% | 13.6% | 10.6% | 3.4% | 2.6% | 1.3% |
| Drywall | 3.0% | 11.0% | 0.1% | 2.8% | 9.8% | 0.4% | 0.0% | 0.0% |
| Asphalt Paving | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Roofing Shingles | 0.1% | 0.7% | 0.5% | 0.0% | 0.0% | 2.6% | 3.5% | 11.9% |
| Fiberglass - insulation | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Fiberglass - rigid | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Rock, Concrete and Grit | 0.0% | 0.0% | 0.0% | 0.6% | 4.1% | 0.0% | 0.0% | 0.0% |
| Other C&D | 1.2% | 3.8% | 2.0% | 0.0% | 0.0% | 6.4% | 0.0% | 0.0% |
| Bagged C&D Debris | 0.5% | 0.6% | 0.5% | 3.8% | 4.3% | 0.6% | 0.0% | 0.0% |
| **Total C&D Debris** | **21.3%** | **35.5%** | **31.5%** | **45.9%** | **60.3%** | **44.6%** | **25.3%** | **28.2%** |
| Furniture | 24.2% | 15.1% | 16.8% | 20.1% | 11.9% | 10.3% | 17.8% | 6.6% |
| Mattresses | 12.4% | 7.8% | 17.7% | 7.8% | 4.6% | 10.9% | 6.7% | 2.5% |
| **Total Furniture** | **36.6%** | **22.9%** | **34.6%** | **27.9%** | **16.6%** | **21.2%** | **24.5%** | **9.1%** |
| Corrugated Cardboard | 4.4% | 1.8% | 2.4% | 5.1% | 2.0% | 1.0% | 4.2% | 1.0% |
| Other Paper | 0.5% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| **Total Paper** | **4.8%** | **3.0%** | **2.4%** | **5.1%** | **2.0%** | **1.0%** | **4.2%** | **1.0%** |
| Film | 1.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Polystyrene Foam | 1.9% | 0.5% | 0.0% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% |
| Rigid Plastics | 5.5% | 2.2% | 5.6% | 5.7% | 2.1% | 2.1% | 6.3% | 1.5% |
| PVC Pipe | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| **Total Plastics** | **8.7%** | **3.0%** | **5.6%** | **6.0%** | **2.2%** | **2.2%** | **6.3%** | **1.5%** |
| Major Appliances | 0.2% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| HVAC Ducting | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% |
| Steel Cans | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.3% |
| Other Ferrous | 1.1% | 2.0% | 2.9% | 0.3% | 0.5% | 5.0% | 0.7% | 0.7% |
| Other Non-Ferrous | 0.2% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.4% |
| **Total Metal** | **1.6%** | **2.7%** | **3.5%** | **0.3%** | **0.5%** | **5.2%** | **1.5%** | **1.4%** |
| Glass Containers | 0.0% | 0.0% | 0.0% | 0.2% | 0.7% | 0.0% | | 0.0% |
| Paned Glass | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.4% | 35.1% |
| **Total Glass** | **0.0%** | **0.0%** | **0.0%** | **0.2%** | **0.7%** | **0.0%** | **5.4%** | **35.1%** |
| Computers | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.3% |
| Televisions | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.6% |
| Other E-waste | 0.6% | 1.9% | 0.0% | 0.5% | 1.7% | 0.0% | 0.0% | 0.0% |
| **Total E-Waste** | **0.6%** | **2.0%** | **0.0%** | **0.5%** | **1.7%** | **0.0%** | **0.5%** | **0.9%** |
| Yard Waste | 0.0% | 0.0% | 0.0% | 0.3% | 0.5% | 0.0% | 0.4% | 0.5% |
| Other Organics & Food Waste | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| **Total Organics** | **0.0%** | **0.0%** | **0.0%** | **0.3%** | **0.5%** | **0.0%** | **0.4%** | **0.5%** |
| Hazardous Waste | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Tires | 0.0% | 0.0% | 0.1% | 0.6% | 1.0% | 0.2% | 0.0% | 0.0% |
| Textiles | 0.8% | 1.0% | 0.8% | 1.5% | 1.7% | 0.9% | 3.9% | 2.7% |
| Household Bagged Waste | 21.9% | 25.7% | 21.6% | 11.1% | 12.4% | 24.8% | 0.0% | 0.0% |
| Mixed Residue/Loose MSW | 3.7% | 4.4% | 0.0% | 0.5% | 0.6% | 0.0% | 28.2% | 19.6% |
| Treated Wood | **26.5%** | **31.0%** | **22.5%** | **13.7%** | **15.6%** | **25.9%** | **32.1%** | **22.3%** |
| **Total** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

Note: Columns may not appear to calculate correctly due to rounding

# Section 4
# Discussion of Findings

## 4.1 Compactor Waste Diversion Opportunities

Table 4-1 summarizes the materials in the compactor waste stream that offer potential for diversion from the current and previous WCSs. Nearly 68 percent of the stream is either currently accepted by the County for recycling or recovery or are potentially recoverable. The overall percentage is lower than in previous years, indicating some success with the County's recovery program. Nevertheless, there is still opportunity to further divert materials from the landfill. Below are some highlights from the WCS results and recommendations to increase waste diversion.

- About 21 of the waste stream is materials currently accepted in the County's mixed recyclables stream, which was mostly paper, corrugated cardboard, and PET bottles. Outreach efforts could promote segregating recyclable paper and other materials for recovery in the compactor stream. It should be noted that the decrease in these mixed recyclables materials from 2017 to 2021 was largely due to a decrease in newspaper. This may be due to decrease generation of newspaper (e.g. through newspaper converting to digital) and/or increased recovery.
- Potentially compostable material, specifically food waste, remains one of the highest potentially recoverable materials in the compactor waste stream. Much of this material could be recovered in an organics collection and compost program. Alternatively or additionally, backyard composting could be promoted through education campaigns, distribution of composters, and conducting compost classes. Outreach could also focus on preventing food waste at the source.
- Textiles remain a significant component of the compactor waste (about 6 percent). Many of the textiles found were in apparent usable shape and may be acceptable at the Swap Shop or other charity organizations or at least placed in the Green Zone containers at the Collection Centers. The County could promote these more to increase textile recovery.
- Glass containers, which are accepted separately from mixed recyclables, and some plastic containers that are not currently accepted, are materials that are often accepted in single stream recycling programs. The County could work with its recyclables processor, possibly joining with other communities that use that processor, to determine how feasible it would be for the processor to accept some of these materials in the future. This could also make glass recycling more convenient for residents by not needing to separate it from other mixed recyclables.

**Table 4-1: Recovery Potential of Compactor Waste (% by weight)**

| | Compactor | | | |
|---|---|---|---|---|
| | **2021** | **2017** | **2014** | **2011** |
| Accepted Recyclable Paper | 13.6% | 16.2% | 22.5% | 19.9% |
| Accepted Recyclable Plastic Containers | 4.2% | 4.2% | 4.6% | 7.2% |
| Accepted Recyclable Metal Containers | 2.8% | 2.7% | 2.9% | 2.8% |
| **Total Accepted Mixed Recyclables** | **20.6%** | **23.1%** | **30.0%** | **29.9%** |
| Glass Containers | 4.4% | 3.3% | 6.1% | 4.5% |
| Scrap Metals | 1.1% | 1.1% | 1.2% | 1.3% |
| Textiles | 6.1% | 4.3% | 3.8% | 6.6% |
| All Accepted C&D Debris | 3.8% | 4.5% | 3.2% | 1.3% |
| All Accepted Special Waste | 0.2% | 0.2% | 0.2% | 0.2% |
| **Total Other Accepted Materials** | **15.4%** | **13.4%** | **14.4%** | **13.9%** |
| Compostable Paper | 5.5% | 9.2% | 9.4% | 8.8% |
| Yard Waste | 2.8% | 1.0% | 0.1% | 1.1% |
| Food Waste | 17.2% | 17.2% | 16.6% | 14.5% |
| **Potentially Compostable Materials** | **25.5%** | **27.3%** | **26.1%** | **24.4%** |
| **Other Potentially Recoverable Materials** | **6.0%** | **4.1%** | **5.9%** | **6.9%** |
| **TOTAL DIVERSION POTENTIAL** | **67.5%** | **67.9%** | **76.5%** | **75.1%** |

Note: Columns may not appear to calculate correctly due to rounding

## 4.2 Pre-Crusher Waste Diversion Opportunities

Table 4-2 summarizes the materials in pre-crusher waste stream that offer potential for diversion from the current and previous WCSs. About 70 percent of this material is either currently accepted by the County for recycling or recovery or are potentially recoverable, lower than in previous years.

- The pre-crusher waste had a significant amount of bagged household waste, resulting in a composition more similar to the compactor waste than bulky roll-off waste. Therefore, many of the opportunities discussed above apply to the pre-crusher waste stream, as well.
- Placing bagged household waste in the pre-crusher does not seem to be the intended purpose of the pre-crushers, which is to reduce the volume of bulky waste to facilitate hauling. The County may wish to address the hauling frequency of its compactor at these locations so that bagged household waste is not placed in the pre-crusher.
- C&D debris was a major component of the pre-crusher waste, as expected. However, as noted in Section 3, the percentage of C&D debris at Pittsboro, which has C&D recycling, was much lower than at Cole Park, which does not have C&D recycling.

**Table 4-2: Recovery Potential of Pre-Crusher Waste (% by weight)**

| | Pre-Crusher | | | |
|---|---|---|---|---|
| | **2021** | **2017** | **2014** | **2011** |
| Accepted Recyclable Paper | 14.2% | 11.5% | 15.1% | 11.5% |
| Accepted Recyclable Plastic Containers | 1.9% | 1.1% | 3.8% | 2.2% |
| Accepted Recyclable Metal Containers | 1.5% | 1.1% | 3.8% | 0.8% |
| **Total Accepted Mixed Recyclables** | **17.7%** | **13.8%** | **22.7%** | **14.5%** |
| Glass Containers | 2.3% | 0.1% | 4.1% | 0.4% |
| Scrap Metals | 1.4% | 0.8% | 3.0% | 0.3% |
| Textiles | 6.0% | 8.4% | 5.1% | 2.7% |
| All Accepted C&D Debris | 17.5% | 28.4% | 22.5% | 41.6% |
| All Accepted Special Waste | 0.1% | 0.1% | 0.1% | 0.1% |
| **Total Other Accepted Materials** | **27.3%** | **37.7%** | **34.7%** | **45.1%** |
| Compostable Paper | 2.8% | 5.5% | 8.4% | 2.8% |
| Yard Waste | 2.6% | 4.5% | 0.0% | 1.2% |
| Food Waste | 11.6% | 5.9% | 6.3% | 6.7% |
| **Potentially Compostable Materials** | **17.0%** | **15.9%** | **14.7%** | **10.7%** |
| **Other Potentially Recoverable Materials** | **8.2%** | **13.2%** | **8.6%** | **3.8%** |
| **TOTAL DIVERSION POTENTIAL** | **70.1%** | **80.6%** | **80.7%** | **74.1%** |

Note: Columns may not appear to calculate correctly due to rounding

## 4.3 Bulky Waste Diversion Opportunities

Table 4-3 lists major materials, as percent by weight, that are potentially recoverable in the bulky waste roll-offs for the current and previous WCSs. About half of the stream (by weight) is potentially recoverable. This is lower than in previous WCSs.

It is important to note that there is significant variability in bulky waste (much more so than in household waste) and these results represent a snapshot of the overall bulky waste from the collection centers during the week of the WCS. Additionally, as mentioned in Section 3 above, caution is advised when using quantified data from visual audits due to inherit subjectivity and inaccuracies.

- C&D debris is still the most significant material in the bulky waste stream. However, given the overall percentage is lower than previous years and three of the centers with C&D recycling had much lower than average percentages of C&D debris, there is evidence that the program is measurably reducing the landfilling of C&D debris. Expanding this program to all centers could have an even higher impact on recovery.
- Mattresses are another major component that is potentially recoverable. While not very common, mattress recycling programs exist across the country. The County may choose to look into the feasibility of this.
- Other items like cardboard, scrap metal, and textiles are already accepted at the centers for recovery. Signage or staff could encourage residents to place these materials in the recovery bins rather than the roll-offs for disposal.
- Many of the rigid plastics, while not currently accepted for recycling, could potentially be recovered as a bulky rigid plastic commodity.

- While not a major component of the waste stream, televisions and e-waste are particularly problematic in the waste stream and are banned from landfills in North Carolina. County staff at the collection centers could more closely monitor for disposal of these items.
- Bagged household waste was a major component of the bulky waste stream. This is placed in the roll-offs when the compactor is full. While this does not impact current disposal processes, as all materials are disposed at the same location, the County could save on disposal fees if the bulky waste could be tipped at a C&D landfill with a lower tipping fee. In which case, household waste would not be allowed in the roll-offs.
- Additionally, an economic and feasibility assessment of additional pre-crushers at other collection centers could be conducted to reduce the number of hauls for bulky waste.

**Table 4-3: Recovery Potential of Roll-Off Waste (% by weight)**

| | 2021 | 2017 | 2014 | 2011 |
|---|---|---|---|---|
| C&D Debris | 35.5% | 44.6% | 60.3% | 28.2% |
| Mattresses | 7.8% | 10.9% | 4.6% | 2.5% |
| Cardboard & Paper | 3.0% | 1.0% | 2.0% | 1.0% |
| Rigid Plastics | 2.2% | 2.1% | 2.1% | 1.5% |
| Scrap Metal | 2.7% | 5.2% | 0.5% | 1.4% |
| Textiles | 1.0% | 0.9% | 1.7% | 2.7% |
| **Total Diversion Potential** | **51.1%** | **63.8%** | **69.6%** | **34.6%** |

Note: Columns may not appear to calculate correctly due to rounding

# 4.4 Conclusions

This WCS represents the fourth WCS over a 10-year period for the County. These regular WCSs provide valuable data to the County to not only measure the changes in their waste stream over the past decade but to also track the progress of its recycling efforts. As mentioned above, the trends in the data indicate increased diversion of recoverable materials from the waste stream. These WCSs allow the County to make informed decisions on its collection and recycling programs.

KCI appreciates the opportunity to once again work with the County in their ongoing efforts to understand their waste streams and increase waste diversion and recycling. We look forward to assisting the County again in the future.

# Appendix A:
# Chatham County
# 2021 Waste Composition Study
# Sorting Material Categories

| # | Material Categories | Description of Categories |
|---|---|---|
| 1 | **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. Newspaper found inside plastic sleeves will be removed from plastic and sorted accordingly. |
| 2 | **Corrugated Cardboard** | Uncoated cardboard boxes with a wavy core (no plastic liners, waxy coatings). Examples include shipping and moving boxes, packing boxes, and clean pizza boxes. |
| 3 | **Mixed Recyclable Paper** | Printed or unprinted recyclable paper including white, colored, coated and uncoated papers, envelopes, index cards, file folders, magazines, telephone books, catalogs, 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.* |
| 4 | **Bagged Shredded Paper** | Shredded paper in paper or plastic bags. Any loose shredded paper will be included in compostable paper. |
| 5 | **Compostable Paper** | Generally, low-grade, non-recyclable paper without a heavy plastic coating, including napkins, tissues, paper towels, and uncoated paper plates. Includes food-contaminated paper. |
| 6 | **All Other Paper** | Non-compostable, non-recyclable paper products with a heavy plastic coating (e.g. waxy or plastic-coated OCC, paper to-go cups, french fry containers, coated paper plates, fast-food wrappers, wax and parchment paper, and ice cream tubs). Includes paper covered with paint or other non-food contamination. |
| 7 | **Aseptic/Polycoated Containers** | Gable-top cartons, aseptic juice boxes, and other similar containers made of coated paperboard. *Does not include plastic drink pouches (e.g. Capri-Suns™).* |
| 8 | **PET Bottles (#1)** | Clear and colored bottles and jars made of polyethylene terephthalate (PET #1). Examples include soda bottles, water bottles, etc. *Does not include loose caps.* |
| 9 | **HDPE Bottles (#2)** | Clear/natural and pigmented plastic bottles coded HDPE #2 such as milk jugs, vinegar bottles, and detergent bottles. *Does not include loose caps.* |
| 10 | **Other Narrow-Neck Bottles** | All narrow-neck plastic containers coded #3-#7, such as vitamin bottles, Arizona Iced Tea™ gallon jugs, etc. *Does not include loose caps.* |
| 11 | **Plastic Tubs** | Wide-mouthed tubs with a lid that can be replaced, including lids, regardless of plastic type. Examples include coffee tubs, yogurt tubs, margarine tubs, sour cream tubs, and humus tubs. |
| 12 | **Plastic Drink Cups** | All plastic drink cups, regardless of plastic type. |
| 13 | **Plastic Clamshells** | All plastic clamshell containers with a hinged lid, regardless of plastic type. *Does not include expanded polystyrene clamshells.* |
| 14 | **Plastic Bottles That Held Toxics** | Empty pesticide, oil, and other bottles that held toxic or hazardous chemicals. *Filled containers will be placed into Other Special Wastes.* |
| 15 | **Other Plastic Containers** | All other plastic containers that are not bottles, tubs, drink cups, and clamshells. Examples include fruit or vegetable platters, small yogurt cups with foil lid, and frozen food trays. |

| # | Material Categories | Description of Categories |
|---|---|---|
| 16 | **Bulky Rigid Plastics** | Non-container, large rigid plastic items, such as plastic drums, crates, toys, buckets, baskets, laundry baskets, lawn furniture, flower pots, and other large plastic items. *Does not include electronic or electric toys, or bulky items consisting of mixed material.* |
| 17 | **Expanded Polystyrene (EPS) Foam (Styrofoam®)** | Container and non-container materials made of expanded polystyrene beads, which are typically white but may be pigmented. Examples include coolers, packaging materials, egg cartons, clam-shell containers, and disposable cups and plates. |
| 18 | **Non-Rigid Plastic Film** | Loose and bagged plastic retail bags, garbage bags, shrink wrap, re-sealable bags, plastic sheeting, Saran™ wrap, visqueen, etc. Also includes disposable gloves. *Does not include foil lined plastic film (e.g. chip bags).* |
| 19 | **All Other Plastics** | Any plastic materials not categorized above, such as deodorant cases, plastic utensils, straws, toothbrushes, broom heads, polypropylene foam products, etc. |
| 20 | **Tin/Steel Cans** | Tin-plated steel cans, usually food containers and aerosol cans, including labels. Also includes steel caps and lids. |
| 21 | **Ferrous Scrap Metals** | Non-container ferrous (magnetic) metal materials. Examples include clothes hangers, sheet metal products, pipes, miscellaneous metal scraps, pots and pans, and other magnetic metal items. |
| 22 | **Aluminum Cans** | Aluminum soft drink, beer, and some food and aerosol cans. |
| 23 | **Aluminum Foil and Trays** | Aluminum foil and food trays, such as disposable pie plates and catering trays. |
| 24 | **Nonhazardous Aerosol Cans** | Empty aerosol cans, of aluminum or steel, that contained nonhazardous materials, such as whipped cream or shaving cream. Empty or full aerosol containers with hazardous materials, such as spray paint, will be placed in Other Special Wastes. |
| 25 | **Non-Ferrous Scrap Metals** | Non-container, non-ferrous (non-magnetic) metal materials. Examples include aluminum pots and pans, aluminum siding, copper wiring and tubing, and brass fixtures. |
| 26 | **Small Appliances** | Household appliances primarily composed of mixed materials (plastic, metal and glass), such as coffee makers, microwaves, fans, irons, hair dryers, electrical kitchen ware, and salvageable items such as machinery. |
| 27 | **Glass Containers** | Clear, green, blue, and amber glass bottles and jars, as well as pieces of broken glass bottles and jars. |
| 28 | **Other Glass** | Window panes, mirrors, ceramics, drinking glasses, and glass containers other than clear, green, blue, or amber. |
| 29 | **Textiles/Leather** | Clothing apparel, rags, leather, blankets, curtains, shoes, wallets, purses, belts, and scrap leather. |
| 30 | **Carpet** | Carpet |
| 31 | **Oil Filters** | Oil Filters |
| 32 | **Lead-Acid Batteries** | Lead-Acid Batteries |
| 33 | **Other Special Wastes** | Cleaners, oil, paint, pesticides, pool chemicals, fluorescent lights, medical waste, solvents, rechargeable batteries, etc., that are considered household hazardous waste. *Does not include syringes without needles.* |

| # | Material Categories | Description of Categories |
|---|---|---|
| 34 | **Computers** | Computers, monitors, printers, scanners and peripherals. |
| 35 | **Televisions** | Televisions of all sizes and types. |
| 36 | **Other E-Waste and Technotrash** | Electronic devices such as DVD players, VCRs, cell phones, cordless telephones, PDAs, handheld devices, rechargeable batteries, as well as media items such as CDs, DVDs, tapes, etc. |
| 37 | **Household Batteries** | Non-rechargeable household batteries including AA, AAA, C, D, 9-volt, and button types. |
| 38 | **Clean Wood Waste** | Untreated and unpainted lumber and dimensional lumber. |
| 39 | **Treated Wood Waste** | Treated and painted wood and dimensional lumber. Also includes engineered wood such as plywood, particle board, oriented strand board, fiberboard, and laminate. |
| 40 | **Pallets** | Pallets and pallet pieces. |
| 41 | **Brick and Concrete** | Brick and concrete of all sizes. |
| 42 | **Other Accepted C&D Debris** | Other construction and demolition debris accepted in the County's C&D recycling pilot program, including cabinets, carpet & padding, counter tops, doors, flooring, drywall, insulation, plumbing fixtures, PVC pipe, shingles, siding, tiles, and windows. |
| 43 | **Unaccepted C&D Debris** | All other construction and demolition debris not listed above. |
| 44 | **Furniture** | Metal, wood, and composite furniture, in whole or in part. |
| 45 | **Mattresses** | Mattresses and box springs. |
| 46 | **Tires and Rubber** | Small and large tires and other items made of rubber. |
| 47 | **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.). |
| 48 | **Food Waste** | Packaged or loose meat and vegetable waste (includes coffee grounds and tea bags). Includes single-use coffee pods (i.e. K-cups®). |
| 49 | **Pet Waste** | Cat litter, feces, hair. |
| 50 | **Diapers** | All child and adult diapers and incontinence aids. Includes feminine hygiene products. |
| 51 | **Composite Materials** | Products that are a composite of materials such as cigarette packages, binders, laminated paper, electrical devices and accessories other than e-waste or small appliances, extension cords, string lights, Pringle's® cans, chip bags, etc. |
| 52 | **Liquids** | All liquids found within containers. Containers will be sorted into their appropriate category. |
| 53 | **Grit** | Any grit or fines remaining on the sort table that cannot be defined in the other categories. |

# Appendix B:
# Chatham County
# 2021 Waste Composition Study
# Visual Audit Material Categories

| Class | Material Category |
|---|---|
| Paper | Corrugated Cardboard |
| | Other Paper |
| Plastic | Film |
| | Polystyrene Foam |
| | Rigid Plastics |
| | PVC Pipe |
| Metal | Major Appliances |
| | HVAC Ducting |
| | Steel Cans |
| | Other Ferrous |
| | Other Non-Ferrous |
| Glass | Glass Containers |
| | Paned Glass |
| Organics | Yard Waste |
| | Other Organics & Food Waste |
| Construction and Demolition Debris | Untreated Wood |
| | Treated Wood |
| | Carpet & Padding |
| | Drywall |
| | Asphalt Paving |
| | Roofing Shingles |
| | Rock, Concrete, and Grit |
| | Fiberglass - insulation |
| | Fiberglass - rigid |
| | Other C&D |

| Class | Material Category |
|---|---|
| Furniture | Furniture |
| | Mattresses |
| Bagged Waste | Household Garbage |
| | C&D Debris |
| Electronics | Computers |
| | Televisions |
| | Other E-Waste |
| Other | Hazardous Waste |
| | Tires |
| | Textiles |
| | Mixed Residue/Loose MSW |

# Appendix C:
# Chatham County
# 2021 Waste Composition Study
# Individual Sample Results

## Table C-1: Compactor Sample Results (% by weight)

| | Collection Center | Cole Park | Pittsboro | Bonlee | Siler City | Goldston | Bennett |
|---|---|---|---|---|---|---|---|
| | **Material Categories sample #** | **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Newspaper | 0.0% | 0.7% | 0.0% | 0.2% | 0.2% | 0.4% |
| 2 | Corrugated Cardboard | 6.1% | 5.0% | 1.6% | 2.8% | 2.1% | 3.3% |
| 3 | Mixed Recyclable Paper | 8.4% | 10.7% | 4.6% | 11.2% | 8.0% | 11.1% |
| 4 | Bagged Shredded Paper | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% |
| 5 | Compostable Paper | 7.5% | 5.8% | 7.5% | 7.1% | 2.4% | 8.1% |
| 6 | All Other Paper | 1.6% | 2.1% | 2.2% | 6.0% | 4.2% | 2.5% |
| 7 | Aseptic/Polycoated Containers | 0.4% | 0.1% | 0.1% | 0.0% | 0.8% | 0.2% |
| 8 | PET Bottles (#1) | 0.2% | 1.1% | 3.1% | 2.7% | 4.1% | 4.8% |
| 9 | HDPE Bottles (#2) | 1.1% | 0.6% | 0.7% | 0.8% | 1.9% | 2.0% |
| 10 | Other Narrow-Neck Bottles | 0.2% | 0.1% | 0.0% | 0.2% | 0.3% | 0.2% |
| 11 | Plastic Tubs | 0.2% | 1.0% | 0.4% | 0.3% | 0.0% | 0.6% |
| 12 | Plastic Drink Cups | 0.0% | 0.0% | 0.6% | 0.7% | 0.3% | 0.5% |
| 13 | Plastic Clamshells | 0.0% | 0.4% | 0.2% | 0.2% | 0.1% | 0.4% |
| 14 | Plastic Bottles That Held Toxics | 0.3% | 0.2% | 0.6% | 0.1% | 0.0% | 0.0% |
| 15 | Other Plastic Containers | 0.3% | 1.1% | 0.5% | 0.7% | 0.1% | 0.8% |
| 16 | Bulky Rigid Plastics | 0.0% | 0.0% | 2.8% | 2.5% | 7.4% | 0.6% |
| 17 | Expanded Polystyrene (EPS) Foam | 0.7% | 1.0% | 1.9% | 1.9% | 1.8% | 2.5% |
| 18 | Non-Rigid Plastic Film | 4.6% | 6.2% | 6.4% | 8.3% | 14.8% | 8.7% |
| 19 | All Other Plastics | 0.9% | 6.0% | 1.4% | 3.7% | 1.9% | 2.9% |
| 20 | Tin/Steel Cans | 1.5% | 1.3% | 0.9% | 1.5% | 1.0% | 3.1% |
| 21 | Ferrous Scrap Metals | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.2% |
| 22 | Aluminum Cans | 1.0% | 0.2% | 0.7% | 1.9% | 0.6% | 3.8% |
| 23 | Aluminum Foil and Trays | 0.5% | 0.7% | 0.5% | 0.1% | 0.8% | 0.5% |
| 24 | Nonhazardous Aerosol Cans | 0.3% | 0.0% | 0.0% | 0.2% | 0.4% | 0.9% |
| 25 | Non-Ferrous Scrap Metals | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 26 | Small Appliances | 0.5% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% |
| 27 | Glass Containers | 3.3% | 1.0% | 3.2% | 3.7% | 2.5% | 7.3% |
| 28 | Other Glass | 0.4% | 0.0% | 0.1% | 0.0% | 1.4% | 0.0% |
| 29 | Textiles/Leather | 15.3% | 8.3% | 1.6% | 4.3% | 3.7% | 0.5% |
| 30 | Carpet | 0.0% | 0.0% | 6.2% | 0.0% | 0.0% | 0.0% |
| 31 | Oil Filters | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 32 | Lead-Acid Batteries | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 33 | Other Special Wastes | 0.2% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% |
| 34 | Computers | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 35 | Televisions | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 36 | Other E-Waste and Technotrash | 0.0% | 2.3% | 0.7% | 0.2% | 0.7% | 1.1% |
| 37 | Household Batteries | 0.0% | 0.1% | 0.1% | 0.1% | 0.0% | 0.0% |
| 38 | Clean Wood Waste | 1.2% | 3.4% | 0.0% | 0.0% | 0.2% | 0.0% |
| 39 | Treated Wood Waste | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.1% |
| 40 | Pallets | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 41 | Brick and Concrete | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 42 | Other Accepted C&D Debris | 0.0% | 1.2% | 0.0% | 0.0% | 0.4% | 0.0% |
| 43 | Unaccepted C&D Debris | 0.0% | 0.0% | 6.5% | 0.0% | 0.0% | 0.0% |
| 44 | Furniture | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 45 | Mattresses | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 46 | Tires and Rubber | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% |
| 47 | Yard Waste | 10.0% | 0.0% | 3.0% | 0.1% | 0.6% | 0.1% |
| 48 | Food Waste | 11.2% | 11.4% | 31.9% | 21.7% | 25.0% | 18.6% |
| 49 | Pet Waste | 11.5% | 10.4% | 2.4% | 0.0% | 0.9% | 0.0% |
| 50 | Diapers | 2.7% | 0.0% | 0.0% | 8.0% | 2.3% | 2.2% |
| 51 | Composite Materials | 5.4% | 17.3% | 3.5% | 6.8% | 5.4% | 8.6% |
| 52 | Liquids | 0.6% | 0.2% | 1.4% | 1.9% | 2.7% | 3.1% |
| 53 | Grit | 1.4% | 0.0% | 1.6% | 0.0% | 0.0% | 0.0% |
| | **TOTALS** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

Note: Columns may not appear to calculate correctly due to rounding

## Table C-1: Compactor Sample Results (% by weight) - continued

| | Collection Center | Hadley | Crutchfield | Harper's Crossroad | Martha's Chapel | Moncure | Asbury |
|---|---|---|---|---|---|---|---|
| | **Material Categories sample #** | **9** | **10** | **11** | **12** | **15** | **16** |
| 1 | Newspaper | 1.0% | 0.2% | 0.0% | 0.1% | 0.0% | 0.0% |
| 2 | Corrugated Cardboard | 1.0% | 1.2% | 1.9% | 0.1% | 2.7% | 3.6% |
| 3 | Mixed Recyclable Paper | 19.4% | 9.4% | 9.0% | 17.8% | 3.7% | 11.0% |
| 4 | Bagged Shredded Paper | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 5 | Compostable Paper | 2.5% | 4.3% | 4.9% | 5.9% | 5.1% | 3.4% |
| 6 | All Other Paper | 2.7% | 2.6% | 2.8% | 2.4% | 2.6% | 2.9% |
| 7 | Aseptic/Polycoated Containers | 0.0% | 0.5% | 0.3% | 0.5% | 0.3% | 0.4% |
| 8 | PET Bottles (#1) | 1.0% | 4.6% | 4.0% | 1.7% | 1.5% | 2.9% |
| 9 | HDPE Bottles (#2) | 0.0% | 2.1% | 1.5% | 0.9% | 0.4% | 1.9% |
| 10 | Other Narrow-Neck Bottles | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 11 | Plastic Tubs | 0.0% | 0.5% | 0.4% | 0.2% | 0.0% | 0.5% |
| 12 | Plastic Drink Cups | 0.0% | 0.3% | 0.5% | 0.2% | 0.3% | 0.9% |
| 13 | Plastic Clamshells | 0.2% | 0.0% | 0.0% | 0.6% | 0.5% | 0.2% |
| 14 | Plastic Bottles That Held Toxics | 0.0% | 0.1% | 1.4% | 0.0% | 0.0% | 0.0% |
| 15 | Other Plastic Containers | 0.1% | 0.0% | 0.5% | 0.3% | 0.5% | 0.3% |
| 16 | Bulky Rigid Plastics | 3.1% | 0.0% | 1.8% | 0.0% | 0.0% | 0.3% |
| 17 | Expanded Polystyrene (EPS) Foam | 0.4% | 2.2% | 0.9% | 0.4% | 0.3% | 0.6% |
| 18 | Non-Rigid Plastic Film | 3.1% | 5.6% | 5.7% | 23.0% | 8.1% | 5.7% |
| 19 | All Other Plastics | 1.8% | 2.2% | 2.6% | 1.3% | 0.4% | 0.9% |
| 20 | Tin/Steel Cans | 0.3% | 1.9% | 1.6% | 0.6% | 0.0% | 0.7% |
| 21 | Ferrous Scrap Metals | 0.9% | 0.5% | 1.0% | 1.5% | 4.6% | 0.0% |
| 22 | Aluminum Cans | 0.2% | 1.1% | 1.2% | 1.5% | 1.4% | 0.9% |
| 23 | Aluminum Foil and Trays | 0.4% | 0.8% | 0.6% | 0.6% | 0.3% | 0.7% |
| 24 | Nonhazardous Aerosol Cans | 0.0% | 1.8% | 0.1% | 1.0% | 0.0% | 0.2% |
| 25 | Non-Ferrous Scrap Metals | 0.7% | 0.0% | 1.0% | 0.0% | 1.4% | 0.6% |
| 26 | Small Appliances | 1.8% | 0.9% | 0.0% | 0.0% | 1.3% | 0.0% |
| 27 | Glass Containers | 0.0% | 16.2% | 4.0% | 5.5% | 4.0% | 2.6% |
| 28 | Other Glass | 2.0% | 0.0% | 1.0% | 0.9% | 0.2% | 0.8% |
| 29 | Textiles/Leather | 10.7% | 3.3% | 17.8% | 1.6% | 5.1% | 3.9% |
| 30 | Carpet | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 31 | Oil Filters | 0.0% | 0.4% | 0.0% | 0.0% | 0.5% | 0.0% |
| 32 | Lead-Acid Batteries | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 33 | Other Special Wastes | 0.2% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% |
| 34 | Computers | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 35 | Televisions | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 36 | Other E-Waste and Technotrash | 0.0% | 2.3% | 0.7% | 0.2% | 0.7% | 1.1% |
| 37 | Household Batteries | 0.0% | 0.1% | 0.1% | 0.1% | 0.0% | 0.0% |
| 38 | Clean Wood Waste | 1.2% | 3.4% | 0.0% | 0.0% | 0.2% | 0.0% |
| 39 | Treated Wood Waste | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.1% |
| 40 | Pallets | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 41 | Brick and Concrete | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 42 | Other Accepted C&D Debris | 0.0% | 1.2% | 0.0% | 0.0% | 0.4% | 0.0% |
| 43 | Unaccepted C&D Debris | 0.0% | 0.0% | 6.5% | 0.0% | 0.0% | 0.0% |
| 44 | Furniture | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 45 | Mattresses | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 46 | Tires and Rubber | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% |
| 47 | Yard Waste | 10.0% | 0.0% | 3.0% | 0.1% | 0.6% | 0.1% |
| 48 | Food Waste | 11.2% | 11.4% | 31.9% | 21.7% | 25.0% | 18.6% |
| 49 | Pet Waste | 11.5% | 10.4% | 2.4% | 0.0% | 0.9% | 0.0% |
| 50 | Diapers | 2.7% | 0.0% | 0.0% | 8.0% | 2.3% | 2.2% |
| 51 | Composite Materials | 5.4% | 17.3% | 3.5% | 6.8% | 5.4% | 8.6% |
| 52 | Liquids | 0.6% | 0.2% | 1.4% | 1.9% | 2.7% | 3.1% |
| 53 | Grit | 1.4% | 0.0% | 1.6% | 0.0% | 0.0% | 0.0% |
| | **TOTALS** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

Note: Columns may not appear to calculate correctly due to rounding

## Table C-2: Pre-Crusher Sample Results (% by weight)

| | Collection Center | Cole Park | Cole Park | Pittsboro | Pittsboro |
|---|---|---|---|---|---|
| | **Material Categories sample #** | **7** | **8** | **13** | **14** |
| 1 | Newspaper | 6.3% | 3.8% | 4.8% | 2.7% |
| 2 | Corrugated Cardboard | 8.5% | 6.7% | 9.8% | 7.9% |
| 3 | Mixed Recyclable Paper | 0.0% | 0.0% | 0.0% | 0.0% |
| 4 | Bagged Shredded Paper | 2.9% | 1.1% | 3.9% | 3.8% |
| 5 | Compostable Paper | 1.5% | 1.3% | 3.7% | 1.7% |
| 6 | All Other Paper | 0.2% | 0.1% | 0.4% | 0.2% |
| 7 | Aseptic/Polycoated Containers | 1.3% | 0.5% | 1.2% | 1.0% |
| 8 | PET Bottles (#1) | 0.2% | 0.7% | 0.7% | 0.8% |
| 9 | HDPE Bottles (#2) | 0.0% | 0.0% | 0.0% | 0.0% |
| 10 | Other Narrow-Neck Bottles | 0.0% | 0.2% | 1.2% | 0.5% |
| 11 | Plastic Tubs | 0.1% | 0.1% | 0.0% | 0.0% |
| 12 | Plastic Drink Cups | 0.0% | 0.0% | 0.2% | 0.5% |
| 13 | Plastic Clamshells | 0.0% | 0.0% | 0.0% | 0.1% |
| 14 | Plastic Bottles That Held Toxics | 0.4% | 0.0% | 0.6% | 0.5% |
| 15 | Other Plastic Containers | 5.2% | 10.1% | 4.9% | 0.4% |
| 16 | Bulky Rigid Plastics | 1.2% | 0.8% | 1.2% | 1.1% |
| 17 | Expanded Polystyrene (EPS) Foam | 6.6% | 4.0% | 9.2% | 5.8% |
| 18 | Non-Rigid Plastic Film | 1.2% | 1.8% | 1.2% | 1.5% |
| 19 | All Other Plastics | 0.4% | 0.5% | 2.1% | 1.0% |
| 20 | Tin/Steel Cans | 0.2% | 1.7% | 2.8% | 0.9% |
| 21 | Ferrous Scrap Metals | 0.4% | 0.1% | 0.9% | 0.4% |
| 22 | Aluminum Cans | 0.2% | 0.0% | 0.2% | 0.5% |
| 23 | Aluminum Foil and Trays | 0.5% | 0.3% | 0.0% | 0.0% |
| 24 | Nonhazardous Aerosol Cans | 0.3% | 0.1% | 0.0% | 0.0% |
| 25 | Non-Ferrous Scrap Metals | 0.0% | 12.8% | 1.5% | 0.0% |
| 26 | Small Appliances | 3.6% | 2.1% | 2.5% | 0.5% |
| 27 | Glass Containers | 0.0% | 1.5% | 0.4% | 0.5% |
| 28 | Other Glass | 4.4% | 0.6% | 7.4% | 14.2% |
| 29 | Textiles/Leather | 0.0% | 4.2% | 0.0% | 0.0% |
| 30 | Carpet | 0.0% | 0.0% | 0.0% | 0.0% |
| 31 | Oil Filters | 0.0% | 0.0% | 0.0% | 0.0% |
| 32 | Lead-Acid Batteries | 0.0% | 0.0% | 0.2% | 0.0% |
| 33 | Other Special Wastes | 0.0% | 0.0% | 0.0% | 0.0% |
| 34 | Computers | 0.0% | 0.0% | 0.0% | 0.0% |
| 35 | Televisions | 0.9% | 1.6% | 0.2% | 0.0% |
| 36 | Other E-Waste and Technotrash | 0.0% | 0.0% | 0.1% | 0.0% |
| 37 | Household Batteries | 8.2% | 4.4% | 2.3% | 6.5% |
| 38 | Clean Wood Waste | 7.8% | 4.7% | 0.0% | 12.8% |
| 39 | Treated Wood Waste | 0.0% | 0.0% | 0.0% | 0.0% |
| 40 | Pallets | 0.0% | 0.0% | 0.0% | 0.0% |
| 41 | Brick and Concrete | 2.3% | 16.9% | 0.2% | 0.3% |
| 42 | Other Accepted C&D Debris | 0.0% | 0.0% | 2.4% | 0.0% |
| 43 | Unaccepted C&D Debris | 0.0% | 0.0% | 4.8% | 0.0% |
| 44 | Furniture | 0.0% | 0.0% | 0.0% | 0.0% |
| 45 | Mattresses | 0.0% | 0.1% | 0.0% | 0.0% |
| 46 | Tires and Rubber | 2.2% | 4.5% | 0.0% | 3.1% |
| 47 | Yard Waste | 10.2% | 1.9% | 22.9% | 15.8% |
| 48 | Food Waste | 7.9% | 0.0% | 0.2% | 5.8% |
| 49 | Pet Waste | 0.0% | 0.0% | 0.8% | 0.0% |
| 50 | Diapers | 6.4% | 5.9% | 4.3% | 3.1% |
| 51 | Composite Materials | 0.2% | 0.0% | 0.8% | 0.0% |
| 52 | Liquids | 8.4% | 4.6% | 0.0% | 0.0% |
| 53 | Grit | 0.0% | 0.0% | 0.0% | 6.4% |
| | **TOTALS** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

Note: Columns may not appear to calculate correctly due to rounding

# Appendix D:
# Chatham County
# 2021 Waste Composition Study
# Individual Visual Audit Results

## Table D-1: Individual Visual Audit Results

| | Collection Center | Bonlee | Pittsboro | Cole Park | Siler City | Bennett | Crutchfield |
|---|---|---|---|---|---|---|---|
| | Sample Number | 1 | 2 | 3 | 4 | 5 | 6 |
| | Day | Mon | Mon | Mon | Mon | Mon | Tue |
| | Volume (cy) | 30 | 40 | 40 | 30 | 30 | 40 |
| | Net Weight | 1.59 | 1.82 | 2.66 | 2.79 | 2.17 | 2.96 |
| Paper | Corrugated Cardboard | 10.0% | 1.7% | 3.0% | 2.5% | 5.0% | 4.7% |
| Paper | Other Paper | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 3.3% |
| Plastic | Film | 0.0% | 4.7% | 0.0% | 0.8% | 0.0% | 1.7% |
| Plastic | Polystyrene Foam | 0.8% | 0.0% | 0.0% | 0.8% | 0.0% | 0.7% |
| Plastic | Rigid Plastics | 2.8% | 5.0% | 1.7% | 10.0% | 2.5% | 5.8% |
| Plastic | PVC Pipe | 0.8% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% |
| Metal | Major Appliances | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Metal | HVAC Ducting | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Metal | Steel Cans | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Metal | Other Ferrous | 1.7% | 1.7% | 2.5% | 0.0% | 1.7% | 4.2% |
| Metal | Other Non-Ferrous | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Glass | Glass Containers | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Glass | Paned Glass | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Organics | Yard Waste | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Organics | Other Organics | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C&D Debris | Treated Wood | 15.0% | 0.0% | 0.8% | 14.2% | 0.8% | 9.2% |
| C&D Debris | Untreated Wood | 0.0% | 0.0% | 0.0% | 5.0% | 0.0% | 0.0% |
| C&D Debris | Carpet & Padding | 2.5% | 0.0% | 19.2% | 5.0% | 0.0% | 0.0% |
| C&D Debris | Drywall | 5.0% | 0.0% | 0.0% | 14.2% | 0.0% | 0.0% |
| C&D Debris | Asphalt Paving | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C&D Debris | Roofing Shingles | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C&D Debris | Fiberglass - insulation | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C&D Debris | Fiberglass - rigid | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C&D Debris | Rock, Concrete and Grit | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C&D Debris | Other C&D | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 2.5% |
| Furniture | Furniture | 20.8% | 14.2% | 40.8% | 13.3% | 10.8% | 13.3% |
| Furniture | Mattresses | 15.8% | 25.8% | 16.7% | 21.7% | 10.8% | 19.2% |
| Bagged | Household Garbage | 20.0% | 41.7% | 7.0% | 2.5% | 61.7% | 25.8% |
| Bagged | C&D Debris | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% |
| Electronics | Computers | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Electronics | Televisions | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% |
| Electronics | Other E-waste/Technotrash | 0.0% | 1.7% | 0.8% | 0.0% | 0.0% | 1.2% |
| Other | HHW | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Other | Tires | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Other | Textiles | 0.0% | 0.0% | 1.7% | 0.8% | 0.0% | 0.8% |
| Other | Mixed Residue/Loose MSW | 1.3% | 2.5% | 5.0% | 7.5% | 6.7% | 5.8% |
| | Total | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** |

Note: Columns may not appear to calculate correctly due to rounding

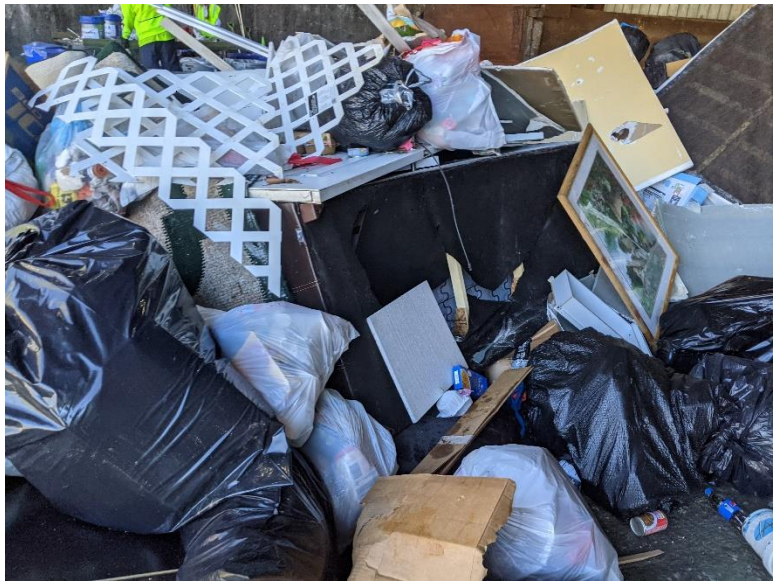
## Table D-1: Individual Visual Audit Results (continued)

| | Collection Center | Hadley | Harper's Crossroads | Martha's Chapel | Goldston | Asbury | Moncure |
|---|---|---|---|---|---|---|---|
| | Sample Number | 7 | 8 | 9 | 10 | 11 | 12 |
| | Day | Tue | Tue | Tue | Wed | Wed | Wed |
| | Volume (cy) | 30 | 30 | 40 | 40 | 30 | 30 |
| | Net Weight | 1.78 | 1.4 | 2.29 | 2.43 | 2.56 | 1.57 |
| Paper | Corrugated Cardboard | 7.5% | 1.7% | 6.7% | 7.5% | 1.7% | 0.0% |
| Paper | Other Paper | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Plastic | Film | 0.0% | 0.0% | 1.7% | 0.0% | 1.7% | 0.0% |
| Plastic | Polystyrene Foam | 0.0% | 0.0% | 1.7% | 0.0% | 0.0% | 21.7% |
| Plastic | Rigid Plastics | 13.3% | 0.8% | 9.2% | 7.5% | 3.0% | 4.2% |
| Plastic | PVC Pipe | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% |
| Metal | Major Appliances | 0.0% | 0.0% | 1.7% | 0.0% | 0.0% | 0.8% |
| Metal | HVAC Ducting | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Metal | Steel Cans | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Metal | Other Ferrous | 0.0% | 0.8% | 0.0% | 0.0% | 0.3% | 0.0% |
| Metal | Other Non-Ferrous | 1.7% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% |
| Glass | Glass Containers | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Glass | Paned Glass | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Organics | Yard Waste | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Organics | Other Organics | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C&D Debris | Treated Wood | 0.8% | 16.7% | 17.5% | 0.0% | 27.5% | 21.7% |
| C&D Debris | Untreated Wood | 0.0% | 1.7% | 5.0% | 0.0% | 15.8% | 0.0% |
| C&D Debris | Carpet & Padding | 8.3% | 5.0% | 9.2% | 1.7% | 0.0% | 0.8% |
| C&D Debris | Drywall | 0.0% | 0.0% | 3.3% | 0.0% | 17.5% | 0.0% |
| C&D Debris | Asphalt Paving | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C&D Debris | Roofing Shingles | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C&D Debris | Fiberglass - insulation | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C&D Debris | Fiberglass - rigid | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C&D Debris | Rock, Concrete and Grit | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| C&D Debris | Other C&D | 0.0% | 4.2% | 0.0% | 2.5% | 3.3% | 0.0% |
| Furniture | Furniture | 25.8% | 57.5% | 19.2% | 18.3% | 23.3% | 37.5% |
| Furniture | Mattresses | 9.2% | 0.0% | 8.3% | 10.8% | 4.2% | 0.0% |
| Bagged | Household Garbage | 25.0% | 10.0% | 10.8% | 45.8% | 0.0% | 5.0% |
| Bagged | C&D Debris | 0.0% | 0.0% | 1.7% | 1.7% | 0.0% | 0.0% |
| Electronics | Computers | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Electronics | Televisions | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Electronics | Other E-waste/Technotrash | 1.7% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% |
| Other | HHW | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Other | Tires | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Other | Textiles | 3.3% | 0.0% | 0.8% | 0.8% | 0.0% | 1.7% |
| Other | Mixed Residue/Loose MSW | 2.5% | 0.0% | 2.5% | 3.3% | 1.7% | 5.8% |
| | Total | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** |

Note: Columns may not appear to calculate correctly due to rounding

# Appendix E:
# Chatham County
# Waste Composition Study
# Visual Audit Photos

Bonlee



Pittsboro

Cole Park

Siler City

Bennett

Crutchfield

Hadley

Harper's Crossroads

Martha's Chapel

Goldston

Asbury

Moncure