

FINAL REPORT

November 23, 2022



Waste Characterization Study





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TABLE OF CONTENTS

| | |
|--|-----------|
| 1. INTRODUCTION | 1 |
| 2. STUDY DESIGN | 1 |
| 2.1 Generator Sectors and Material Streams | 1 |
| 2.2 Sampling Plan | 2 |
| 2.3 Material Categories..... | 2 |
| 2.4 Ontario County Waste Generation | 3 |
| 3. FIELD DATA COLLECTION METHODS | 4 |
| 3.1 Sampling..... | 4 |
| 3.2 Manual Sorting | 5 |
| 3.3 Data Recording..... | 5 |
| 3.4 Data Analysis | 6 |
| 4. RESULTS | 7 |
| 4.1 Refuse Composition | 7 |
| 4.2 Comparisons | 9 |
| 5. CONCLUSIONS AND RECOMMENDATIONS | 12 |
| 5.1 Conclusions..... | 12 |
| 5.2 Recommendations | 13 |

LIST OF APPENDICES

Appendix A – Material Categories & Definitions

TABLE OF CONTENTS

List of Figures

| | |
|---|----|
| Figure 3-1 Systematic Sampling Procedure for Incoming Loads | 4 |
| Figure 3-2 Sample Collection | 5 |
| Figure 3-3 Sorting | 5 |
| Figure 3-4 Data Entry | 6 |
| Figure 4-1 Targeted Material Composition by Residential Stream..... | 9 |
| Figure 4-2 Recoverability by Residential Stream..... | 10 |
| Figure 4-3 Targeted Materials in Residential Private Hauler vs ICI..... | 10 |
| Figure 4-4 Recoverability in Residential Private Hauler vs ICI | 11 |
| Figure 4-5 Residential Private Hauler Top Ten Material Categories..... | 11 |
| Figure 4-6 ICI Top Ten Material Categories | 12 |

List of Tables

| | |
|--|---|
| Table 2-1 Sampling Plan | 2 |
| Table 2-3 Material Categories and Groups | 3 |
| Table 2-2 Annual Ontario County Disposed MSW | 4 |
| Table 4-1 Waste Composition by Stream..... | 8 |

ONTARIO COUNTY WASTE CHARACTERIZATION STUDY

1. INTRODUCTION

Ontario County is a rural county located southeast of Rochester in the heart of the Finger Lakes communities. With just under 110,000 residents within 26 municipalities, municipal solid waste (MSW) and recycling collection services are provided through a combination of municipal and private hauler services.

County-generated waste is predominately delivered to the County-owned Municipal Solid Waste Landfill located within the Town of Seneca, which can accept 2,999 tons per day. The landfill and onsite Material Recovery Facility (MRF) are currently operated on the County's behalf by Casella. Casella staffs both landfill and MRF operations, and also provides commercial and residential hauling services along with other private and municipal haulers. Fourteen municipalities within the County operate and maintain their own transfer station facilities. Only about 10 percent of the waste and recycling generated within Ontario County is collected at these municipal transfer stations prior to being brought to the Casella-operated landfill. The majority of the County's waste is collected and transported by private hauling companies.

As part of its Local Solid Waste Management Plan (LSWMP) Ontario County has the goals of facilitating responsible waste management practices and reducing the amount of waste generated by County residents. The County strives to meet the diversion goals set forth by its LSWMP by implementing waste diversion programs and providing resident education and outreach. The Ontario County Department of Sustainability & Solid Waste retained MSW Consultants to comprehensively analyze the waste generated within the County to provide a baseline of data to better focus diversion, education, and enforcement efforts.

The objectives of the study were to:

- ◆ Complete a municipal solid waste characterization study that clearly describes the waste generated in Ontario County including a breakdown by waste category and statistical analysis sufficient to establish context and relevance of the raw data.
- ◆ Provide information and analysis that supports ongoing County efforts to devise a targeted and effective strategy for increased waste reduction and diversion in compliance with the County's adopted Solid Waste Management Plan.

This report summarizes the methodology and sampling plan developed to guide the composition study and presents the results of the research in graphical and tabular format. The report also offers conclusions and recommendations to support future data needs and opportunities to increase waste diversion within Ontario County.

2. STUDY DESIGN

2.1 GENERATOR SECTORS AND MATERIAL STREAMS

Based on the objectives, budget, and guidance from County staff, MSW Consultants proposed a sampling plan to obtain, sort, and weigh samples of the following material streams:

- ◆ **Residential Private Hauler Refuse** collected by 3rd party private haulers from single-family residences throughout the County,
- ◆ **Residential Municipal Refuse** collected by municipal haulers from single-family residences throughout the County,

ONTARIO COUNTY WASTE CHARACTERIZATION STUDY

- ◆ **Industrial/Commercial/Institutional (ICI) Refuse** collected from businesses and institutional generators within the County, and
- ◆ **Residential Convenience Center Refuse** collected from residential drop-off (self-haul) locations at convenience centers/transfer stations.

Refuse was divided between Residential and ICI generators so the County could identify recycling opportunities and develop public education and outreach strategies that target each audience.

2.2 SAMPLING PLAN

The objective of the sampling plan for any waste characterization study is to obtain a representative distribution of samples from the targeted waste streams and generator sectors. The sampling budget for this waste composition study was set at 50 samples over five days. Table 2-1 summarizes the sampling targets for the study and shows the actual number of samples obtained. As shown, all targeted samples were obtained during the study and some additional samples were also obtained.

Table 2-1 Sampling Plan

| Generator Sector(s) | Planned Samples | Actual Samples |
|---|-----------------|----------------|
| Residential Private Hauler | 30 | 30 |
| Residential Municipal Hauler | 5 | 8 |
| Industrial/Commercial/Institutional (ICI) | 12 | 15 |
| Residential Convenience Centers | 3 | 4 |
| Total | 50 | 57 |

Prior to the fieldwork, MSW Consultants obtained three years of scale data for the landfill from Casella staff in order to understand the distribution of inbound deliveries over the course of the week. However, the scale data did not differentiate generator type, hauler, or truck type. Therefore, County and Casella staff provided feedback during kick-off calls and email communication to establish the sampling priorities and top haulers/generators.

The main driver of this study for the County was to better understand the Residential Private Hauler waste, as the majority of County residential waste is transported by private haulers. As a result, sampling targets focused on this generator sector. At the request of County staff, additional samples were to be taken from the Residential Municipal, Industrial/Commercial/Institutional (ICI), and Residential Convenience Center generators as a matter of interest, and as time allowed during the sorting event. Ultimately, an insufficient number of samples were obtained from Residential Municipal Hauler and Residential Convenience Centers to provide a meaningful statistical analysis. However, the mean composition for wastes from these generator sectors was found to be reasonable in the professional opinion of MSW Consultants, and statistically robust results are provided for Residential Private Hauler and ICI waste.

2.3 MATERIAL CATEGORIES

Each sample of refuse and recyclables was sorted into 50 material categories. Table 2-3 shows the breakdown of the material categories within their respective material groups. Detailed definitions for each of these categories is shown in Appendix A.

ONTARIO COUNTY WASTE CHARACTERIZATION STUDY

Table 2-2 Material Categories and Groups

| Material Category | Material Category |
|---|--|
| Paper | Metals |
| Corrugated Cardboard/Kraft Paper (Uncoated) | Aluminum Cans & Containers |
| Newsprint | Other Aluminum |
| Magazines | Tin/Steel Containers |
| High Grade Office Paper | Other Ferrous |
| Mixed Recyclable Paper | Other Non-Ferrous |
| Aseptic Containers/Gable Top Cartons | Oil Filters |
| Compostable Paper | Organics |
| Remainder/Composite Paper | Food Waste |
| Plastic | Wood - Clean/Untreated |
| PET (#1) Bottles/Jars | Wood - Painted/Stained/Treated |
| PET (#1) Non-Bottle Containers | Textiles - Clothing |
| HDPE (#2) Natural Containers | Textiles - Non-Clothing |
| HDPE (#2) Colored Containers | Shoes/Belts/Leather |
| Clean Retail Film Bags | Disposable Diapers & Sanitary Products |
| Clean Industrial/Commercial Film (Non-Bag) | Yard Waste |
| Contaminated Film/Other Film | Remainder/Composite Organic |
| Plastic Containers #3 - #7 | Inorganics |
| Expanded Polystyrene | Drywall/Gypsum Board |
| Bulky Durable Plastic Products | Asphalt, Brick, Concrete, & Rocks |
| Remainder/Composite Plastic | Carpet & Carpet Padding |
| E-Waste/HHW | Other Construction & Demolition |
| Electronic Waste | Bulky Items |
| HHW | Furniture |
| Glass | Mattresses/Box Springs |
| Clear Glass Containers | Tires |
| Brown Glass Containers | Other/Not Classified |
| Green Glass Containers | Fines |
| Remainder/Composite Glass | |

Key: ■ Targeted Recyclable ■ Compostable Organics ■ Special Collection ■ Not Readily Recoverable

2.4 ONTARIO COUNTY WASTE GENERATION

The County landfill, operated by Casella, maintains weight-based records of the annual quantity of inbound refuse. Table 2-2 shows the three years of Ontario County disposed municipal solid waste tonnage data for third party and intercompany haulers. Casella provided actual tonnages for 2020 and 2021 and approximately half of 2022. The estimated 2022 tonnage total was projected using prior monthly data from

ONTARIO COUNTY WASTE CHARACTERIZATION STUDY

the last two years and extrapolating to account for seasonal differences in waste generation. As shown, there has been slow growth in Ontario County MSW disposal over this time span.

Table 2-3 Annual Ontario County Disposed MSW

| Year | Actual 2020 | Actual 2021 | Estimated 2022 |
|------|-------------|-------------|----------------|
| Tons | 28,965 | 29,150 | 31,541 |

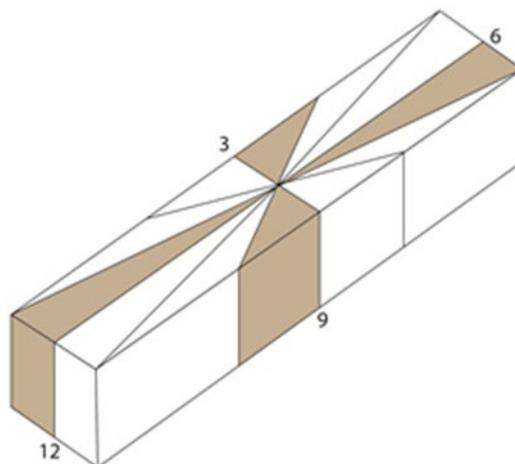
3. FIELD DATA COLLECTION METHODS

3.1 SAMPLING

Inbound loads of material were randomly selected within the stratified sampling plan. MSW Consultants interviewed the drivers of selected loads to confirm the geographic origin and generator sector, as well as any other pertinent data. As the landfill accepts out-of-county waste, only loads collected from within Ontario County were sampled for this study. Truck information was noted on a handheld tablet computer, along with a unique identifying number associated with that vehicle on that day.

Selected loads of waste designated for sorting were tipped in the designated area at the landfill. From each selected load, one sample of material was selected based on systematic “grabs” from the perimeter of the load. For example, if the tipped pile is viewed from the top as a clock face with 12:00 being the part of the load closest to the front of the truck, the first samples was taken from 3 o’clock, 6 o’clock, 9 o’clock, 12 o’clock, and then from 1, 4, 7, and 10 o’clock, and so-on. This is illustrated in Figure 3-1.

Figure 3-1 Systematic Sampling Procedure for Incoming Loads



Once the area of the tipped load was selected, MSW Consultants’ Field Supervisor coordinated with a County-provided loader operator to take a “grab” sample of wastes from that point in the tipped load. Samples were deposited in barrels to contain the sample and to enable the sampling team to pre-weigh the sample according to sample mass targets. Each sample was labeled by its identifying number using a white board. The white board for sample identification stayed with the sample until sorting and weigh out was completed. Photos of inbound loads/samples are shown in Figure 3-2.

Figure 3-2 Sample Collection



3.2 MANUAL SORTING

Once each sample had been acquired, the material was manually sorted into the prescribed component categories. A sort table surrounded by plastic 5-gallon, 18-gallon and 35-gallon bins with sealed bottoms, as shown in Figure 3-3, was used to sort samples by material category. Sorters were asked to specialize in certain material groups, with someone handling the paper categories, another the plastics, another the glass and metals, and so on. In this way, sorters were able to become highly knowledgeable in a short period of time as to the definitions of individual material categories.

Figure 3-3 Sorting



3.3 DATA RECORDING

The weigh-out and data recording process is the most critical process of the sort. The MSW Consultants Crew Chief oversaw all weighing and data recording of each sample. Once each sample was sorted, and fines swept from the table, the weigh-out was performed. Each bin containing sorted materials from the just-completed sample was carried over to the scale. The sorting crew assisted with carrying and weighing the bins of sorted material, and the Crew Chief recorded all data.

The Crew Chief used a rugged tablet computer to record the composition weights. The tablet allowed for samples to be tallied in real time so that field data collection could immediately identify and rectify errors associated with over or under sample or material weights. The tablet synchronizes with the cloud via internet to MSW Consultants' *WasteInsight*[™] data management platform, providing excellent data security.

ONTARIO COUNTY WASTE CHARACTERIZATION STUDY

Each sample was cross-referenced against the Field Supervisor's sample sheet to assure accurate tracking of the samples each day. The real-time data entry offered several important advantages:

- ◆ The tablet contains built-in logic and error checking to prevent erroneous entries.
- ◆ The tablet sums sample weights in real time so the Crew Chief can confirm achievement of weight targets for each sample.

Figure 3-4 Data Entry



3.4 DATA ANALYSIS

The mean composition has been calculated for each of the material categories for all four material streams in this study. Samples were first normalized by converting the sample data from weight to percentage. Then, the sample mean was determined by averaging the percent composition of each material across all samples.

Confidence intervals are provided for each material category as well as for major material groups (e.g., "paper", "plastic", etc.) for Residential Private Hauler waste and ICI waste. Confidence intervals have been calculated at a 90 percent level of confidence, meaning that we can be 90 percent sure that the upper and lower bounds of a confidence interval successfully capture its respective population mean. (The converse is also true: that there is a 10 percent chance that a confidence interval will fail to capture its population mean.) In general, as the number of samples increases, the width of the confidence intervals decreases, although the more variable the underlying waste stream composition, the less noticeable the improvement for adding incremental samples.

The number of samples obtained from Residential Municipal Hauler waste and Residential Convenience Center waste was not sufficient to calculate meaningful confidence intervals.

4. RESULTS

4.1 REFUSE COMPOSITION

Table 4-1 below shows the detailed composition of all three residential streams and the ICI stream, with the margin of error shown for two of the streams. There is a wealth of information in this table for the interested reader, and it is hoped that the data in this table can serve as a baseline snapshot of the County waste stream and inform many stakeholders. MSW Consultants has attempted to highlight findings of interest which can all be derived from the detailed composition data. These findings are shown in the ensuing figures, with associated commentary.

ONTARIO COUNTY WASTE CHARACTERIZATION STUDY

Table 4-1 Waste Composition by Stream

| Material Category | Residential Private Hauler | | Residential Municipal Hauler | Residential Convenience Centers | Industrial / Commercial / Institutional | |
|---|----------------------------|-------------|------------------------------|---------------------------------|---|-------------|
| | Mean | +/- | Mean | Mean | Mean | +/- |
| | | | | | | |
| Paper | 24.7% | 1.4% | 24.1% | 15.4% | 29.4% | 3.9% |
| Corrugated Cardboard/Kraft Paper (Uncoated) | 4.4% | 1.0% | 2.7% | 2.5% | 8.3% | 1.3% |
| Newsprint | 0.4% | 0.1% | 0.2% | 0.0% | 0.4% | 0.2% |
| Magazines | 0.6% | 0.3% | 0.9% | 0.2% | 0.2% | 0.2% |
| High Grade Office Paper | 0.1% | 0.1% | 0.2% | 0.5% | 1.5% | 1.2% |
| Mixed Recyclable Paper | 5.5% | 0.6% | 5.1% | 4.6% | 7.1% | 2.3% |
| Aseptic Containers/Gable Top Cartons | 0.4% | 0.1% | 0.4% | 0.3% | 0.2% | 0.1% |
| Compostable Paper | 9.3% | 0.6% | 11.1% | 4.8% | 8.1% | 1.6% |
| Remainder/Composite Paper | 4.1% | 0.6% | 3.6% | 2.5% | 3.6% | 0.8% |
| Plastic | 16.5% | 1.3% | 15.7% | 13.9% | 19.6% | 2.5% |
| PET (#1) Bottles/Jars | 1.7% | 0.2% | 0.9% | 0.8% | 1.2% | 0.3% |
| PET (#1) Non-Bottle Containers | 0.7% | 0.1% | 0.6% | 0.4% | 0.4% | 0.1% |
| HDPE (#2) Natural Containers | 0.3% | 0.1% | 0.2% | 0.1% | 0.7% | 0.3% |
| HDPE (#2) Colored Containers | 0.5% | 0.1% | 0.6% | 0.3% | 0.5% | 0.2% |
| Clean Retail Film Bags | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Clean Industrial/Commercial Film (Non-Bag) | 0.0% | 0.0% | 0.0% | 0.0% | 2.7% | 1.5% |
| Contaminated Film/Other Film | 7.0% | 0.6% | 8.4% | 3.4% | 6.6% | 1.1% |
| Plastic Containers #3 - #7 | 1.7% | 0.2% | 2.2% | 1.0% | 1.3% | 0.3% |
| Expanded Polystyrene | 0.6% | 0.1% | 0.4% | 0.7% | 0.6% | 0.4% |
| Bulky Durable Plastic Products | 2.1% | 0.7% | 0.3% | 5.3% | 3.5% | 1.3% |
| Remainder/Composite Plastic | 1.9% | 0.3% | 2.0% | 1.8% | 2.2% | 0.7% |
| Metals | 3.5% | 0.5% | 2.1% | 3.0% | 2.9% | 0.9% |
| Aluminum Cans & Containers | 0.8% | 0.2% | 0.6% | 0.4% | 0.6% | 0.2% |
| Other Aluminum | 0.6% | 0.1% | 0.5% | 0.4% | 0.2% | 0.1% |
| Tin/Steel Containers | 1.3% | 0.3% | 0.6% | 0.4% | 0.6% | 0.2% |
| Other Ferrous | 0.6% | 0.3% | 0.4% | 1.4% | 1.0% | 0.8% |
| Other Non-Ferrous | 0.1% | 0.1% | 0.1% | 0.4% | 0.4% | 0.3% |
| Oil Filters | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% |
| Glass | 3.5% | 0.7% | 2.5% | 4.1% | 2.5% | 1.0% |
| Clear Glass Containers | 1.8% | 0.3% | 1.2% | 2.1% | 1.0% | 0.5% |
| Brown Glass Containers | 0.7% | 0.6% | 0.5% | 0.6% | 0.6% | 0.6% |
| Green Glass Containers | 0.5% | 0.2% | 0.6% | 0.9% | 0.6% | 0.4% |
| Remainder/Composite Glass | 0.5% | 0.2% | 0.3% | 0.4% | 0.2% | 0.2% |
| Organics | 40.4% | 2.4% | 45.8% | 31.6% | 31.4% | 3.7% |
| Food Waste | 20.5% | 1.2% | 23.1% | 14.5% | 18.4% | 2.7% |
| Wood - Clean/Untreated | 0.5% | 0.5% | 0.1% | 1.7% | 2.6% | 1.7% |
| Wood - Painted/Stained/Treated | 1.2% | 0.6% | 2.2% | 1.6% | 2.0% | 1.3% |
| Textiles - Clothing | 2.1% | 0.7% | 3.1% | 2.5% | 0.8% | 0.8% |
| Textiles - Non-Clothing | 1.7% | 0.4% | 1.6% | 1.9% | 0.9% | 0.7% |
| Shoes/Belts/Leather | 0.4% | 0.2% | 0.7% | 2.6% | 0.1% | 0.1% |
| Disposable Diapers & Sanitary Products | 6.9% | 1.0% | 9.4% | 4.2% | 3.4% | 1.7% |
| Yard Waste | 2.5% | 0.8% | 2.4% | 1.7% | 1.6% | 1.0% |
| Remainder/Composite Organic | 4.6% | 1.4% | 3.2% | 1.0% | 1.6% | 0.8% |
| E-Waste/HHW | 0.8% | 0.6% | 0.7% | 0.9% | 0.2% | 0.1% |
| Electronic Waste | 0.7% | 0.6% | 0.4% | 0.8% | 0.0% | 0.1% |
| HHW | 0.2% | 0.1% | 0.3% | 0.0% | 0.1% | 0.1% |
| Inorganics | 10.6% | 1.7% | 9.1% | 31.2% | 14.1% | 3.6% |
| Drywall/Gypsum Board | 0.2% | 0.2% | 0.5% | 0.0% | 1.1% | 1.1% |
| Asphalt, Brick, Concrete, & Rocks | 0.3% | 0.3% | 0.0% | 0.0% | 0.4% | 0.6% |
| Carpet & Carpet Padding | 0.8% | 0.8% | 0.0% | 9.1% | 2.9% | 2.5% |
| Other Construction & Demolition | 1.2% | 0.9% | 0.3% | 1.5% | 0.9% | 0.9% |
| Bulky Items | 1.6% | 0.7% | 2.1% | 2.7% | 1.6% | 1.1% |
| Furniture | 2.4% | 1.5% | 1.9% | 6.8% | 3.5% | 2.3% |
| Mattresses/Box Springs | 0.4% | 0.7% | 0.0% | 9.9% | 0.0% | 0.0% |
| Tires | 0.2% | 0.3% | 0.0% | 0.0% | 0.9% | 1.1% |
| Other/Not Classified | 2.8% | 0.9% | 3.0% | 0.8% | 2.1% | 0.8% |
| Fines | 0.9% | 0.1% | 1.4% | 0.5% | 0.6% | 0.1% |
| Total | 100% | | 100% | 100% | 100% | |

ONTARIO COUNTY WASTE CHARACTERIZATION STUDY

All four streams featured a majority of organic material with all but Residential Convenience Centers having paper as their second largest material group. Residential Convenience Centers instead had inorganic materials as the second most prevalent group, mainly composed of mattresses/box springs (9.9%), carpet & carpet padding (9.1%), and furniture (6.8%). The most prevalent material category was food waste with 20.5% in Residential Private Hauler waste and 18.4% in ICI waste.

4.2 COMPARISONS

The graphics and figures in this section provide visual comparisons of the composition of wastes from the four separate generator types included in the study.

Figure 4-1 compares the incidence of targeted curbside recyclables remaining in the disposed residential waste stream. As shown, private haulers of residential wastes were found to have the highest incidence of recyclables. However, it should be reiterated that this finding is not statistically verifiable due to the low sample counts for two of the residential waste streams.

Figure 4-1 Targeted Material Composition by Residential Stream

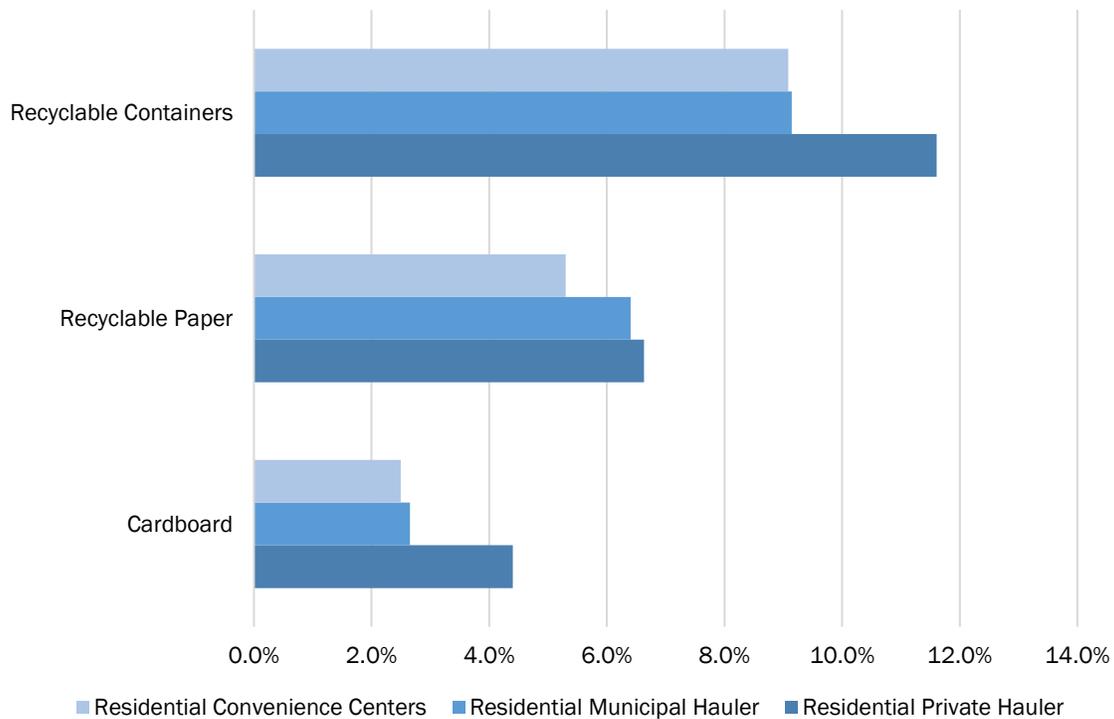


Figure 4-2 shows the recoverability of materials by residential stream. Interestingly, curbside-collected wastes were very similar in terms of the proportions of recoverable and non-recoverable constituents. Further, the fractions of recyclables and compostable organics in the waste streams for Residential Private Haulers and Residential Municipal Haulers are within expectations for residential curbside wastes. However, Residential Convenience Center waste was found to have a higher proportion of non-recoverable and special collection constituents (although this result is based on only four samples).

ONTARIO COUNTY WASTE CHARACTERIZATION STUDY

Figure 4-2 Recoverability by Residential Stream

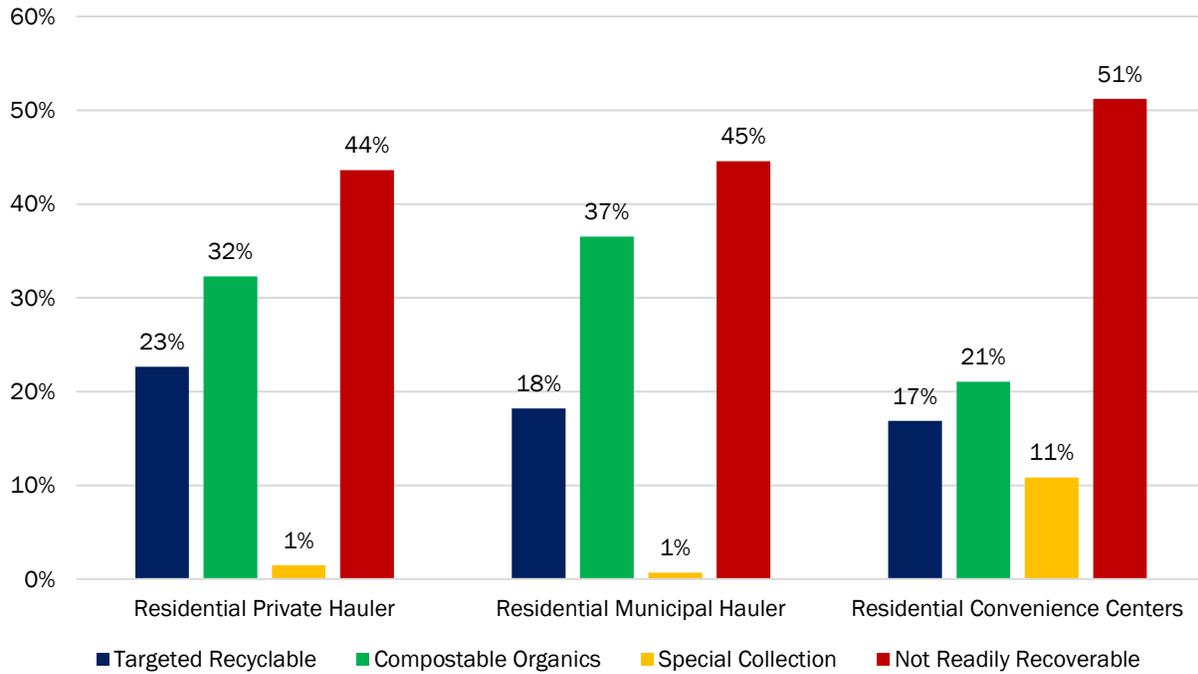
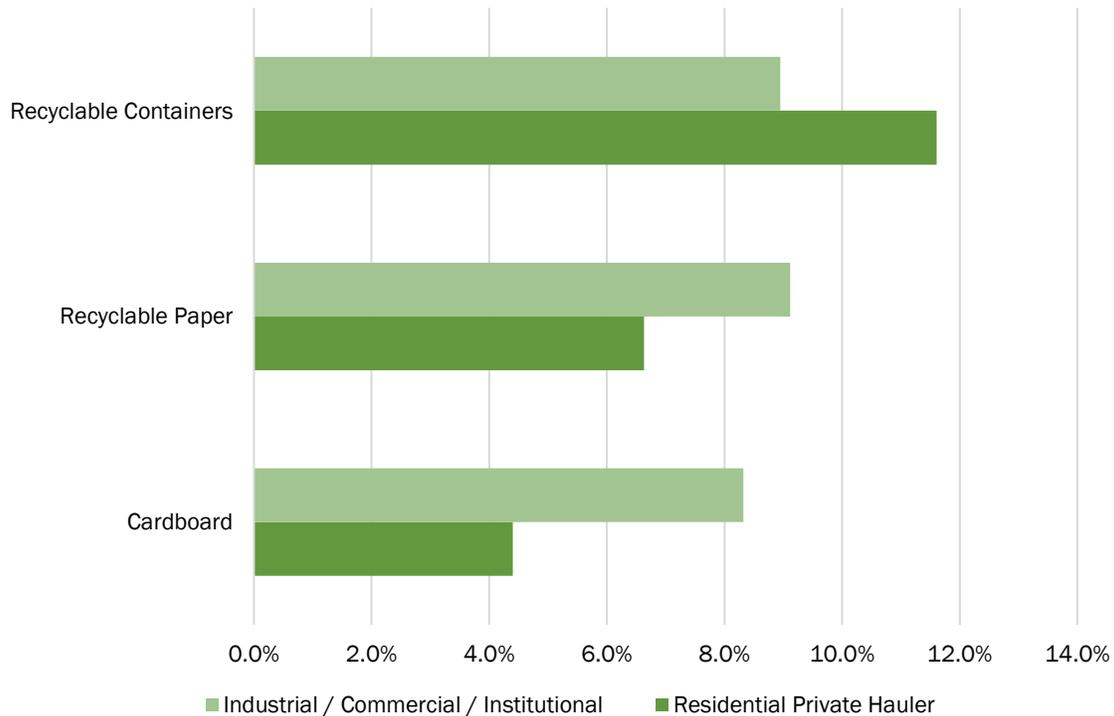


Figure 4-3 compares the incidence of targeted curbside recyclables in Residential Private Hauler and ICI waste. Unsurprisingly, recyclable paper and corrugated cardboard were found in higher proportion in ICI waste, while recyclable containers were more prevalent in residential waste.

Figure 4-3 Targeted Materials in Residential Private Hauler vs ICI



ONTARIO COUNTY WASTE CHARACTERIZATION STUDY

Figure 4-4 compares the recoverability of Residential Private Hauler and ICI waste, which are found to be very similar in the aggregate data.

Figure 4-4 Recoverability in Residential Private Hauler vs ICI

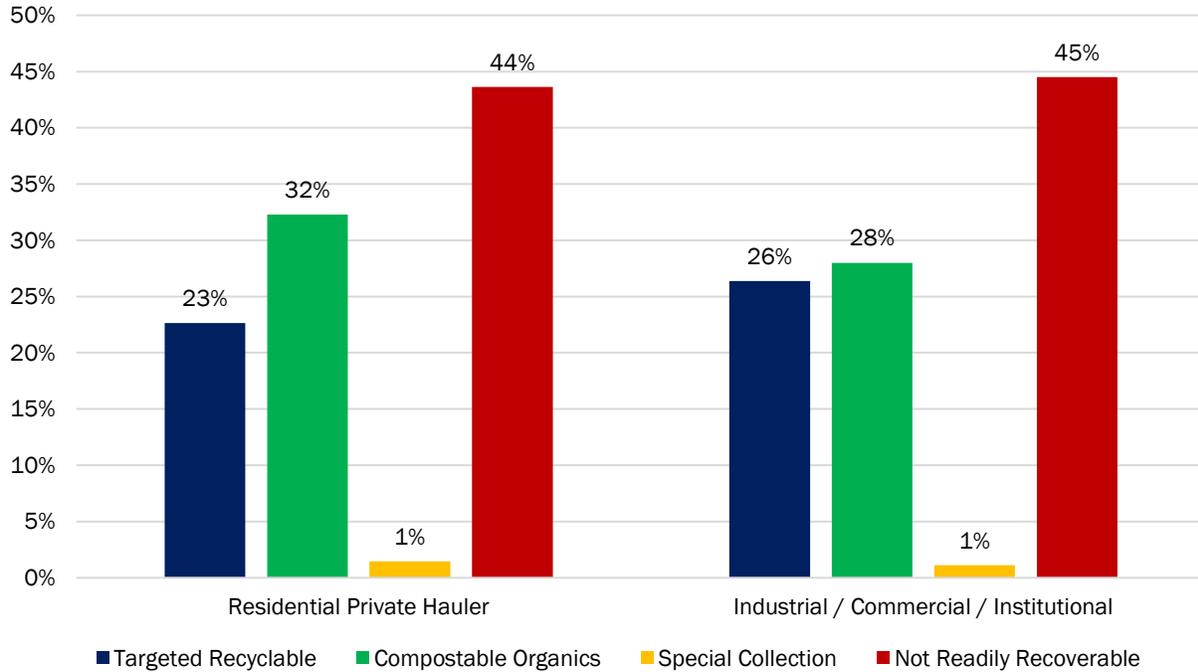


Figure 4-5 and Figure 4-6 provide the ten most prevalent material categories in the Residential Private Hauler and ICI streams, respectively. Both streams were found to have food waste as the most prevalent category, along with various paper categories. Corrugated cardboard ranked higher in the ICI stream, while disposal diapers ranked higher in the Residential stream.

Figure 4-5 Residential Private Hauler Top Ten Material Categories

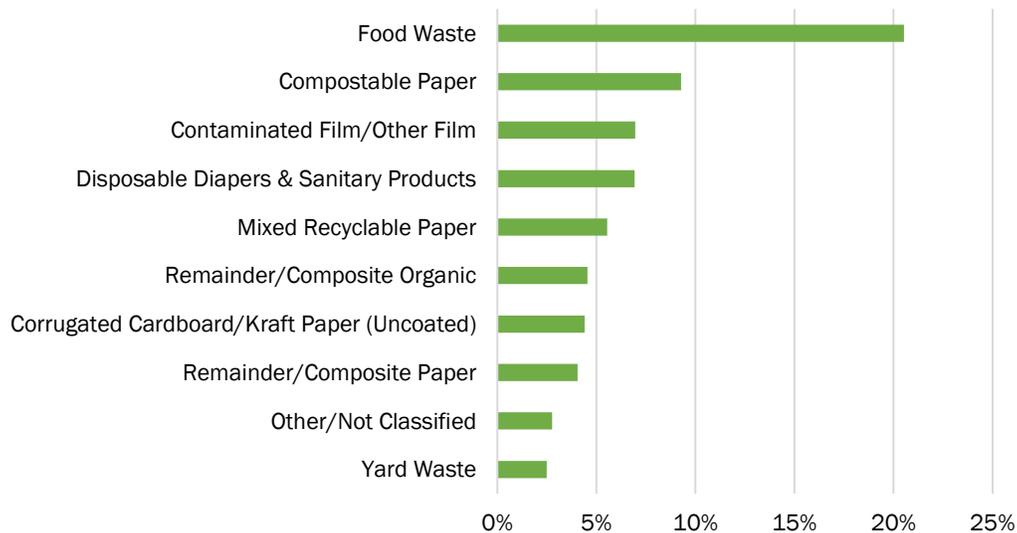
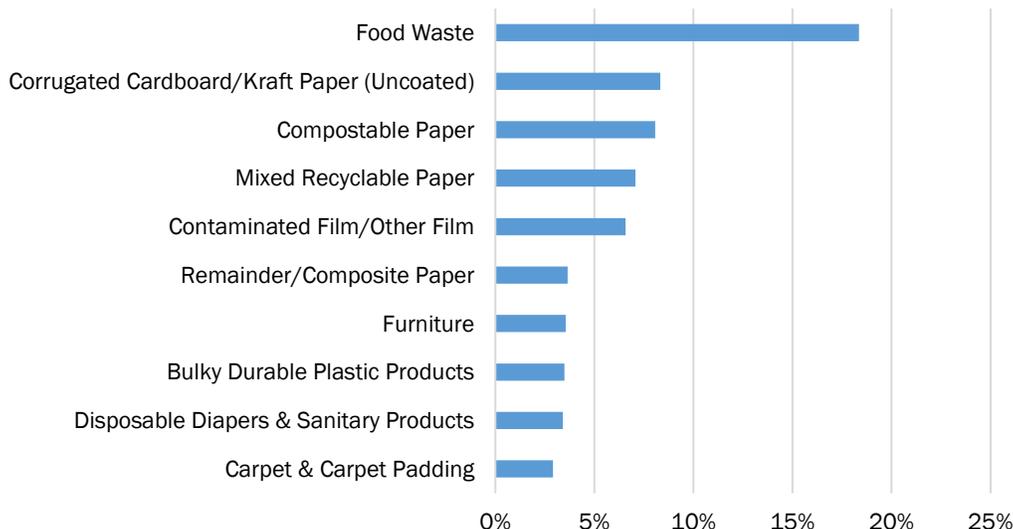


Figure 4-6 ICI Top Ten Material Categories



5. CONCLUSIONS AND RECOMMENDATIONS

MSW Consultants offers the following conclusions and recommendations regarding the Ontario County 2022 Waste Composition Study.

5.1 CONCLUSIONS

- ◆ The study was successful at compiling a baseline understanding of Ontario County’s residential and ICI waste streams. The study data can be used by County solid waste and recycling planners, policymakers, and other stakeholders charged with developing or improving waste diversion and education programs.
- ◆ Residential Private Hauler waste was the focus of the study, and good representation was achieved by the sampling counts. The ICI stream was also adequately sampled for an initial snapshot of ICI waste composition, but further sampling is recommended to strengthen the statistical validity of the results. As requested by the County, only a small sample size was obtained for the other residential streams, to provide a snapshot, but due to the limited samples obtained, no attempt has been made to provide the margin of error because it would be so large as to have limited value.
- ◆ The low incidence of curbside recyclables in the residential waste streams are indicative of a well-performing curbside recycling program.
- ◆ Residential food waste is the single largest component of the waste stream and represents an opportunity for diversion. However, it is difficult to separate these organic materials from the residential sector without significant investment in composting programs, alternative collection services, and public education.
- ◆ This initial study did not target construction and demolition (C&D) debris. This waste type is disposed at the County landfill and in the future, it may be desirable to characterize C&D wastes. The methods for characterizing C&D and other bulky wastes are different than manual sorting, instead relying on volumetric estimation methods. MSW Consultants offers the leading app in the industry to make these estimates.
- ◆ A single season study in the summer might underrepresent yard waste and potentially certain packaging materials which increase during other times of the year.

5.2 RECOMMENDATIONS

MSW Consultants offers the following recommendations for consideration by the County:

- ◆ County and local governments on the leading edge of waste diversion have begun to utilize material characterization as a critical measurement strategy. Assuming Ontario County remains committed to goals of sustainability and waste minimization, waste composition studies should be updated at reasonable intervals, such as every five years.
- ◆ Should the County expand the study, it is recommended that a second season be added to increase the representativeness of the study. Alternatively, a future single-season study could be performed at a different time of year to gain insight on the waste stream.
- ◆ Should the County target C&D debris for recycling and diversion from landfill, it may want to conduct a visual survey of the composition of C&D debris.
- ◆ Expanded sorting of Residential Convenience Centers and Residential Municipal Hauler waste would improve accuracy of these composition results and provide a more robust understanding of the residential waste stream. However, increased sampling targets must be balanced with available research budget.
- ◆ Finally, we note that many communities that conduct disposed waste characterization studies are also able to investigate their commodity-specific recycling capture rates. A capture rate is the percentage of any targeted recyclable that is actually recycled in the curbside program, and hence “captured.” It was beyond the scope of this study to include recycling composition; however, the County may have access to recycled material composition and tonnage data, and/or to perform a recycling characterization study in the future, in order to determine its recycling capture rates. Some funds may be available from one or more not-for-profit research organizations to support this research.

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APPENDIX A
MATERIAL CATEGORIES & DEFINITIONS

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APPENDIX A – MATERIAL CATEGORIES & DEFINITIONS

PAPER

- 1 CORRUGATED CARDBOARD/KRAFT PAPER (UNCOATED): Corrugated boxes or paper bags made from Kraft paper. Wavy center layer sandwiched between two outer layers without wax coating on the inside or outside. Examples include cardboard shipping containers and moving boxes, computer packaging cartons, and sheets and pieces of boxes and cartons. Does not include chipboard. Examples of Kraft paper include paper grocery bags, un-soiled fast-food bags, department store bags, and heavyweight sheets of Kraft packing paper. Relatively unsoiled pizza boxes acceptable.
- 2 NEWSPRINT: Paper used in newspapers and all items made from newsprint. Examples include newspapers and glossy inserts found in newspapers, and items such as free advertising guides, election guides, plain news packing paper, stapled college class schedules, and tax instruction booklets.
- 3 MAGAZINES: Multi-page bound paper items (glued or stapled) made of glossy coated paper. This paper is usually slick, smooth to the touch, and reflects light. Examples include glossy magazines, catalogs, brochures, and pamphlets. Does not include newspaper inserts.
- 4 HIGH GRADE OFFICE PAPER: Paper that is free of ground wood fibers; usually sulfite or sulphate paper; includes office printing and writing papers such as white ledger, color ledger, envelopes, and computer printout paper, bond, rag, or stationary grade paper. This subtype does not include fluorescent-dyed paper or deep-tone dyed paper such as goldenrod colored paper.
- 5 MIXED RECYCLABLE PAPER: Recyclable paper other than the paper types mentioned above. Examples include chipboard/paperboard, junk mail, manila folders, manila envelopes, phone books, index cards, white envelopes, white window envelopes, notebook paper, carbonless forms, groundwood paper, softcover books, and deep-toned or fluorescent dyed paper.
- 6 ASEPTIC CONTAINERS & GABLE TOP CARTONS: Aseptic containers (multi-layered packaging that contains shelf-stable food products such as apple juice, soup, soy/rice milk, etc.) and "gable top" cartons (non-refrigerated items such as granola and crackers; refrigerated items such as milk, juice, egg substitutes, etc.). Rigid food and beverage cartons are usually paper based, may be any shape, and may include a plastic pour spout as part of the carton.
- 7 COMPOSTABLE PAPER: Low-grade, biodegradable paper that cannot be recycled, as well as food contaminated paper. Examples include paper towels, napkins, paper plates, waxed papers and waxed cardboard, tissues, and unlined paper cups.
- 8 REMAINDER/COMPOSITE PAPER: Paper products made mostly of paper but combined with large amounts of other materials such as plastic, metal, glues, foil, and moisture. Examples include corrugated cardboard coated with plastic, cellulose insulation, blueprints, sepia, onion skin, foiled lined fast-food wrappers, frozen juice containers, carbon paper, self-adhesive notes, hardcover books, and photographs.

APPENDIX A – MATERIAL CATEGORIES & DEFINITIONS

PLASTIC

- 9** PET (#1) BOTTLES/JARS: Clear or colored PET bottles or jars. The plastic resin number “1” is visible in the center of the triangular recycling symbol and may also bear the letters “PETE” or “PET”. A PET container usually has a small dot left from the manufacturing process, not a seam. It does not turn white when bent.
- 10** PET (#1) NON-BOTTLE CONTAINERS: Non-bottle containers such as rectangular PET clamshell or tray containers used for produce; etc. The plastic resin number “1” is visible in the center of the triangular recycling symbol and may also bear the letters “PETE” or “PET”. The color is usually transparent, green, or clear. This category only includes PET non-bottle containers that did not previously contain hazardous materials.
- 11** HDPE (#2) NATURAL CONTAINERS: Natural colored HDPE bottles. This plastic is usually cloudy white, allowing light to pass through it (natural). When marked for identification, it bears the number “2” in the triangular recycling symbol and may also bear the letters “HDPE. Also includes natural buckets, pails or paint cans made of HDPE and designed to hold 5 gallons or less of material. This category only includes colored HDPE containers that did not previously contain hazardous materials.
- 12** HDPE (#2) COLORED CONTAINERS: Colored HDPE bottles. In contrast with natural HDPE, the colored HDPE is usually a solid color and opaque. When marked for identification, it bears the number “2” in the triangular recycling symbol and may also bear the letters “HDPE. Also includes colored buckets, pails or paint cans made of HDPE and designed to hold 5 gallons or less of material. This category only includes colored HDPE containers that did not previously contain hazardous materials.
- 13** CLEAN RETAIL FILM BAGS: Plastic retail bags used to contain merchandise to transport from the place of purchase, given out by the store with the purchase. Retail Film Bags sorted into this category will largely be clean: free of excessive debris or moisture.
- 14** CLEAN INDUSTRIAL/CONSUMER FILM (NON-BAG): Film plastic used to wrap merchandise to transport to the consumer. Includes dry-cleaning plastic bags, newspaper sleeves intended for one-time use, and non-bag commercial and industrial packaging film used for large-scale packaging or transport packaging. Examples include shrink-wrap, mattress bags, furniture wrap, and film bubble wrap. Commercial/Consumer Film products sorted into this category will largely be clean: free of excessive debris or moisture.
- 15** CONTAMINATED FILM/OTHER FILM: Plastic film or bags that are non-recyclable. Examples include garbage bags, and other types of plastic bags (sandwich bags, zip (re-closeable) bags, produce bags, frozen vegetable bags), juice pouches, painting tarps, food wrappers such as candy-bar wrappers.
- 16** PLASTIC CONTAINERS #3 THRU #7: Bottles, jars, containers, lids, and other packaging that are made of types of plastic other than PET (1) or HDPE (2). Items may be made of vinyl, LDPE, PVC, PP, PS, or other plastic. They may bear the number 3, 4, 5, 6, or 7 in the triangular recycling symbol, or may bear no recycling symbol. Examples include clamshells, trays, tray lids, cups, bowls, plates, hardware and fastener packaging, detergent and cleaning products bottles, squeezable bottles, frozen food containers, microwave food trays, vitamin bottles, cookie trays found in cookie packages, small (less than 1 gallon) brittle (single-use) plant containers such as nursery pots and plant six-packs.
- 17** EXPANDED POLYSTYRENE: Food and Non-food EPS foam packaging. Includes clamshell food containers, as well as cups, plates, and bowls. Includes finished products made of expanded polystyrene such as block Styrofoam padding and packing peanuts.

APPENDIX A – MATERIAL CATEGORIES & DEFINITIONS

- 18** **BULKY DURABLE PLASTIC PRODUCTS:** Plastic items other than containers or film plastic, which are made to last for more than one use. These items may bear the numbers 1 through 7 in the triangular recycling symbol. Examples include crates, buckets (including 5-gallon buckets), baskets, totes, large plastic garbage cans, large tubs, large storage tubs/bins (usually with lids), flexible (non-brittle) and durable flowerpots of 1 gallon size or larger, lawn furniture, large plastic toys, toolboxes, first aid boxes, and some sporting goods, CDs and their cases, plastic housewares such as durable (not single-use) dishes, cups, and cutlery.
- 19** **REMAINDER/COMPOSITE PLASTIC:** Plastic that cannot be put in any other type or subtype. Includes items made mostly of plastic but combined with other materials. Examples include auto parts made of plastic attached to metal, plastic drinking straws, produce trays, foam packing blocks (not including expanded polystyrene blocks), plastic strapping, handles and knobs, plastic cup lids, some kitchenware, plastic toys, plastic string (as used for hay bales), and plastic rigid bubble/foil packaging (as for medications).

METAL

- 20** **ALUMINUM CANS & CONTAINERS:** Aluminum containers for food or beverage. Also includes aluminum cat food containers.
- 21** **OTHER ALUMINUM:** Non-container aluminum products such as aluminum foil or aluminum food trays. Does not include items significantly contaminated with food or other material.
- 22** **TIN/STEEL CONTAINERS:** Steel or tin food or other containers. Includes aerosol containers. If significant food or other product remains in the container (greater than the weight of the container), it shall instead be sorted in that product material category.
- 23** **OTHER FERROUS:** Any iron or steel that is magnetic or any stainless-steel item. This type does not include tin/steel cans. Examples include structural steel beams, metal clothes hangers, metal pipes, stainless steel cookware, security bars, and scrap ferrous items. Also includes composite material that is mostly ferrous metal by weight.
- 24** **OTHER NON-FERROUS:** Any metal item, other than aluminum cans, foils, or trays, that is not stainless steel and that is not magnetic. These items may be made of aluminum, copper, brass, bronze, lead, zinc, or other metals. Examples include copper wire, shell casings, and brass pipe. Also includes composite material that is mostly non-ferrous metal by weight.
- 25** **OIL FILTERS:** Predominantly metal filters, most commonly used in motor vehicles, which are designed to remove contaminants from engine oil, transmission oil, lubricating oil, or hydraulic oil.

GLASS

- 26** **CLEAR GLASS CONTAINERS:** Includes all clear glass bottles, jars, and containers. Examples include beer, wine and soft drink bottles, and jars for food or other materials. If significant food or other product remains in the container (greater than the weight of the container), it shall instead be sorted in that product material category.
- 27** **BROWN GLASS CONTAINERS:** Includes all brown glass bottles, jars, and containers. Examples include beer bottles and jars for food or other materials. If significant food or other product remains in the container (greater than the weight of the container), it shall instead be sorted in that product material category.
- 28** **GREEN GLASS CONTAINERS:** Includes all green glass bottles, jars, and containers. Examples include beer, wine and soft drink bottles, and jars for food or other materials. If significant food or other product remains in the container (greater than the weight of the container), it shall instead be sorted in that product material category.

APPENDIX A – MATERIAL CATEGORIES & DEFINITIONS

- 29 REMAINDER/COMPOSITE GLASS: Non-container glass. This category includes items made mostly of glass but combined with other materials. Examples include Pyrex, Corningware, crystal and other glass tableware, mirrors, non-fluorescent light bulbs, auto windshields, laminated glass, or any curved glass. Uncoated plate glass - includes window and door glass, tabletops, and some auto glass (side windows).

ORGANICS

- 30 FOOD WASTE: Food wastes and scraps, including meat, bone, dairy, grains, rinds, teabags, coffee grounds with filters, etc. Excludes the weight of food containers, except when container weight is not appreciable compared to the food inside. Compostable peanuts, food packaging with food scraps, and small wooden produce crates are also included in this category.
- 31 WOOD – CLEAN/UNTREATED: Any wood which does not contain an adhesive, paint, stain, fire retardant, pesticide, or preservative; includes such items as bulky wood waste or scraps from newly built wood products. Does not including land clearing debris or yard waste prunings and trimmings. The presences of nails or screws are acceptable.
- 32 WOOD – PAINTED/STAINED/TREATED: Wood that contains an adhesive, paint, stain, fire retardant, pesticide, or preservative. Does not include wood furniture.
- 33 TEXTILES - CLOTHING: Fabric products used for clothing (socks, pants, shirts, outerwear, undergarments, etc.)
- 34 TEXTILES - NON-CLOTHING: Fabric products such as blankets, towels, curtains, and stuffed animals.
- 35 SHOES/BELTS/LEATHER: Shoes, belts, and leather products such as handbags, purses, and wallets.
- 36 DISPOSABLE DIAPERS & SANITARY PRODUCTS: Adult and baby disposable diapers, and feminine hygiene products.
- 37 YARD WASTE: Plant material, including woody material, from any public or private landscapes. Examples include leaves, grass clippings, plants, brush, and branch prunings and trimmings.
- 38 REMAINDER/COMPOSITE ORGANICS: Organic material that is not food or yard waste. Includes cork, popsicle sticks, hair, animal waste, cigarette butts, chopsticks, woven baskets, and small non-construction related wood products.

E-WASTE/HHW

- 39 ELECTRONIC WASTE: Includes all electronic items with a circuit board, including CRTs or other video displays, plasma and LCD monitors, cell phones, personal computers, laptop computers, notebook computers, processors, keyboards, etc. Includes stereos, VCRs, DVD players, etc. This category does not include automated typewriters or typesetters.
- 40 HHW: Includes paints, solvents, batteries (lithium, alkaline, lead-acid), vehicle fluids, medical waste, pesticides/fertilizers, cleaners, CFLs, fluorescent tubes, etc.

APPENDIX A – MATERIAL CATEGORIES & DEFINITIONS

INORGANICS

- 41 DRYWALL/GYPSUM BOARD: Interior wall covering made of a sheet of gypsum sandwiched between paper layers. Examples include used or unused, broken, or whole sheets of sheetrock, drywall, gypsum board, plasterboard, gypsum board, gyproc, and wallboard.
- 42 ASPHALT, BRICK, CONCRETE & ROCKS: Includes asphalt paving/roofing materials, set, or unset, and all types of fire-clay bricks. Includes Portland cement mixtures (set or unset), with or without aggregate materials (gravel, etc.). Includes rock gravel larger than 2" in diameter.
- 43 CARPET & CARPET PADDING: Flooring applications consisting of various natural or synthetic fibers bonded to some type of backing material. Carpet padding may include plastic, foam, felt, or other material used under the carpet to provide insulation and padding.
- 44 OTHER CONSTRUCTION & DEMOLITION: Construction and demolition material that cannot be put in any other type or subtype. This type may include items from different types combined, which would be very hard to separate. Also includes fiberglass insulation, ceramic fixtures, and other miscellaneous C&D Materials not mentioned above.
- 45 BULKY MATERIALS: Large, hard-to-handle items that are not defined separately. Examples include all sizes and types of furniture, mattresses, box springs, and base components.
- 46 FURNITURE: Large furniture pieces such as couches, tables, chairs made of predominately mixed materials.
- 47 MATTRESSES/BOX SPRINGS: Mattresses and box springs.
- 48 TIRES: Vehicle, equipment, and small tires.
- 49 OTHER NOT CLASSIFIED: Any other type of waste material not listed in any other sort category. Includes full cosmetics, shampoos, lotions, etc.
- 50 FINES: Small mixed fragments 2" and smaller that cannot be readily sorted.

APPENDIX A – MATERIAL CATEGORIES & DEFINITIONS

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