City of
Greeley
Colorado

FINAL REPORT

Waste Characterization Study

September 14, 2023

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2023 WASTE CHARACTERIZATION STUDY

1. INTRODUCTION

The City of Greeley, Colorado (City) is a major city of the Front Range Urban Corridor and home to the University of Northern Colorado and Aims Community College. The City is the 10th largest in Colorado by population and is home to almost 36,600 households. From 2010 to 2020, the population of the Greeley metropolitan statistical area (MSA), which encompasses the entirety of Weld County, experienced a 30 percent increase, making it the fastest growing metro area in Colorado and the fourth fastest-growing metro area in the country.

At present, the City has set no policy or goals related to waste diversion activities. As such, and at the recommendation of City Council in 2022, the City applied for and received a Front Range Waste Diversion (FRWD) grant to evaluate policy options related to waste diversion. The City retained MSW Consultants to complete a waste characterization study of the waste to landfill generated by single family households. The resulting data will serve as a foundation of the City's long-term zero waste planning process and will help to better define the overall goals and objectives of the City's planned Waste Diversion Study.

The remainder of this report summarizes the methodology and presents a detailed profile of the quantity and composition of single-family residential refuse generated in Greeley.

2. RESIDENTIAL WASTE GENERATION

The goal of this sampling plan was to obtain a representative distribution of samples for City single-family residential waste.[1] In the absence of readily available City tonnage data at the commencement of field operations, MSW employed a systematic sampling approach, selecting every Nth truck that meets the necessary criteria for sampling. As a practical approach, this was adjusting to selecting every truck collecting from the City in an attempt to meet sampling targets.

Following the completion of both seasons of field data collection operations, MSW was able to secure customer and tonnage data from three of the four haulers operating within the City. In the aggregate, these three haulers serve 21,008 customers, or 57 percent of the City's 36,994 households.

The weighted average household generation rate of 1.11 tons per year from these reporting haulers was applied to the City's total households to estimate annual citywide residential tonnage of 41,058. The composition estimates from this study are therefore applied to this estimated tonnage to reflect the Citywide residential disposed waste composition. Methodology

2.1 SAMPLE TARGETS

A total of 80 samples (40 per season) were targeted for the study. This target exceeds the minimum seasonal sampling target for residential waste characterization of 30 samples. A combined total of 76 samples were collected for both seasons, although four had to be discarded as outliers. The remaining 72 samples provide an accurate estimate of the City's residential waste stream at a 90 percent level of confidence, with low margins of error for primary constituent in the stream.

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[1] Although wastes generated in apartments and condominiums is also technically residential waste, multi-family properties are typically collected concurrently with commercial wastes on mixed collection routes. It was not feasible in Greeley's unregulated collection system to arrange collection and characterization multi-family residential waste.

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2.2 MATERIAL CATEGORIES

MSW Consultants collaborated with the City to develop a list of material categories that suited the City's objectives. The final material groups and material categories are shown in Table 2-1. This table also indicates the recyclability of each material based on the following recyclability class codes:

◆ **Class 1 – Targeted Recyclable**: Fiber and Containers targeted in curbside collection programs within the City.

◆ **Class 2 – Compostable Material**: Yard Waste, leaves, compostable paper, and food waste. These materials could potentially be diverted via grinding, mulching, composting or other organics management programs.

◆ **Class 3 – Recyclable by Third-Party**: Materials which are often available for diversion through programs like clothing donations, plastic bag take-back programs, electronics recycling, or scrap metal recovery.

◆ **Class 4 – Not Readily Divertible**: Materials for which there are no readily available outlets for recycling, composting, or other diversion from landfill. In some cases, these materials can be diverted from the landfill, but research into the availability of such programs is beyond the scope of this report.

The expanded list of material categories with definitions can be found in Appendix A.

Table 2-1 Material Categories and Recoverability Classes

Group	Class	Material Category	Group	Class	Material Category
Paper	1	Corrugated Cardboard/Kraft Paper	Glass	1	Clear Glass Bottles/Jars
	1	Newspaper		1	Brown Glass Bottles/Jars
	1	High Grade Office Paper		1	Green Glass Bottles/Jars
	1	Magazines and Catalogues		4	Remainder/Composite Glass
	1	Aseptic & Gable Top Cartons	Organics	2	Food Waste
	1	Mixed Recyclable Paper		2	Yard Waste
	2	Compostable Paper		4	Remainder/Composite Organics
	4	Remainder/Composite Paper	C&D	4	Wood – Treated/Painted/Stained
Plastic	1	PET (#1) Bottles/Jars		4	Wood – Untreated/Clean
	3	PET (#1) Non-bottle Containers		4	Drywall/Gypsum Board
	1	HDPE (#2) Natural Containers		4	Asphalt Paving, Brick, Concrete, and Rock
	1	HDPE (#2) Colored Containers		4	Carpet & Carpet Padding
	1	Rigid Plastic Containers #3- #7		4	Remainder/Composite C&D
	4	Expanded Polystyrene	HHW	4	Household Hazardous Waste
	3	Clean Film Bags		4	Sharps and Medical Waste
	3	Clean Commercial/Industrial Film	Other	3	All Electronics
	4	Contaminated/Other Film		3	Textiles - Clothing
	4	Durable/Bulky Rigid Plastics		4	Textiles - Non-Clothing
	4	Remainder/Composite Plastic		4	Rubber/Leather Products
Metals	1	Aluminum Containers		4	Tires
	1	Aluminum Foils and Trays		4	Disposable Diapers & Sanitary Products
	3	Other Non-Ferrous Metals		4	Supermix
	1	Steel Cans & Lids		3	Mattresses & Box Springs
	3	Other Ferrous Metals		4	Bulky Materials
	4	Oil Filters		4	Other Materials Not Elsewhere Classified

3. FIELD DATA COLLECTION

This section outlines the methods employed to conduct field operations for the study. Field operations were performed by Colorado-based Diversion Designers, with training and data management provided by MSW Consultants.

3.1 LOCATION & SAMPLING DATES

Field data collection operations were hosted at the Ault Landfill, operated by WM (located at 40000 W C R 25, Ault, CO 80610). The landfill was a natural choice for hosting sampling and sorting, as the vast majority of City residential refuse is tipped there. MSW and WM scheduled an introductory call to confirm dates, and work area requirements.

In order to achieve a better understanding of residential refuse composition throughout the year, two seasons of data collection were scheduled. The first season was performed the week of March 6th, 2023. The second season was scheduled and performed the week of May 22nd, 2023.

3.2   STAFFING PLAN

The staffing roles for field operations were as follows:

- A **Project Manager** from MSW Consultants oversaw the project and provided training on sample selection and collection, proper sorting of collected material, and data collection. The Project Manager deployed with the team for the duration of the first season and provided support remotely during the second season.
- A **Field Supervisor** from Diversion Designers interfaced with the WM operations staff and scale house staff on sample selection and acquisition, supports material sorting and weighing efforts, provides quality assurance and control (QA/QC), and has overall on-site responsibility.
- A **Crew Chief** from Diversion Designers supervised the sorting crew, performed quality control, weigh-out and data recording, and led worksite health and safety training.
- **Sorters** recruited by Diversion Designers from their network of associates specialized in material identification, sorting, and weighing.

3.3   HEALTH & SAFETY

Each member of the sorting team reviewed the MSW Consultants' Safety and Health Plan (SAHP) which governs waste composition study safety, Personal Protective Equipment (PPE) requirements, and other safety procedures. Additionally, field operations personnel discussed PPE requirements with host facility management staff in advance of on-site arrival. The sorting team also underwent specific training for safe handling of material.

3.4   INBOUND MATERIAL SAMPLING

The Field Supervisor conducted brief interviews of drivers with potentially eligible trucks[2] to determine if the truck load was comprised of single-family refuse collected within the City. Once a truck was confirmed to have met those criteria, the driver was directed to drive to an isolated area of the tip face to tip. This separated area allowed the Field Supervisor to take photographs of the load and accurately direct the loader operator where to scoop for sample collection. Figure 3-1 shows a selected truck dumping in the designated collection.

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[2]Inbound side-loader and Curotto can front-loader compactor trucks were selected as candidates for interviews. These trucks collect predominantly carted material, which limits risk that commercially generated refuse is mixed in with the residential material. As a result, the vast majority of sampled materials originated in the single-family residential sector, although it is possible that some multi-family wastes may have been captured within the data.

Figure 3-1 Emptying Truck in Audit Zone

The loads of waste designated for sorting were tipped in the designated area at the landfill. From tipped loads, sample material was gathered based on randomized scoops from the perimeter of the load. For example, the tipped pile can be viewed from the top as a clock face with 12:00 being the part of the load closest to the front of the truck. "Slices" were chosen, with the assistance of a random number generator to avoid sampling bias. The first sample could be taken from the 3 o'clock slice, the second from 8 o'clock, then 9 o'clock, 1 o'clock and so-on. This is illustrated below in Figure 3-2.

Figure 3-2 Load Sampling Diagram
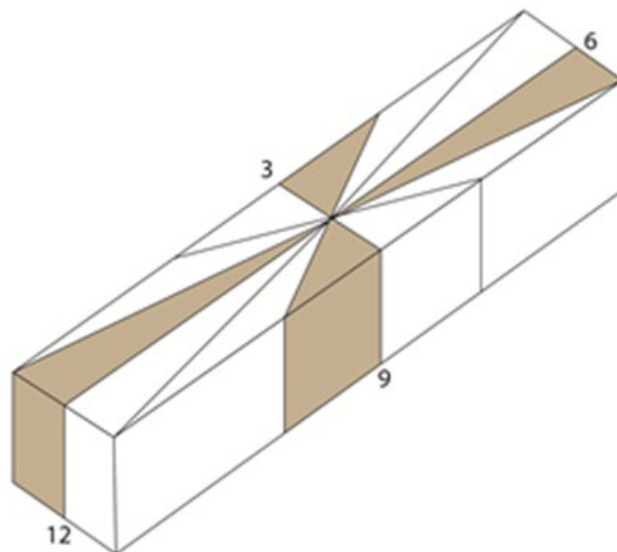
These selected slices were then scooped up with a loader, as shown in Figure 3-3, and raked from the loader bucket down into an arranged row of 32-gallon barrels. These barrels were then pre-weighed to

confirm that a minimum sample weight of 200 lbs. was achieved. This collection of barrels was then staged along the sorting area and marked with an ID number, along with other essential information to await sorting and digital photographing.

Figure 3-3 Loader Bringing Selected Scoop to Sampling Area

3.5   MANUAL SORTING

Once each sample had been acquired, staged, and labeled, sample material was loaded onto the sort table and manually sorted into the prescribed component categories. Plastic 18- and 32-gallon containers with sealed bottoms were used to contain the separated components. Sorters were trained to specialize in certain material groups, with one handling the paper categories, another the plastics, another the glass and metals, and so on. In this way, sorters can become knowledgeable of material categories and definitions within a short period of time. Figure 3-4 provides an image of workers sorting through the remaining material from one of the samples.

Figure 3-4 Sort Table

3.6   DATA RECORDING

The weigh-out and data recording process is the most critical process of the sort. The Crew Chief oversaw all weighing and data recording of each sample. Once all sample material had been cleared from the table, the weigh-out was performed. Each bin containing sorted materials from the just-completed sample was carried over to the weigh-out station, where all bins were weighed out and weight data is entered. Sample material was then discarded.

The Crew Chief used a rugged tablet computer to record the composition weights. The tablet allows for samples to be tallied in real-time so that field data collection can immediately identify and rectify errors associated with light sample weights. All data was synchronized with the Cloud via the internet, providing excellent data security. Each sample was cross-referenced against the Field Supervisor's sample sheet (the pre-weight) to ensure accurate tracking of the samples each day. The real-time data entry offers several important advantages:

◆   The template contains built-in logic and error checking to prevent erroneous entries.

◆   The template sums sample weights in real-time so the Crew Chief can confirm achievement of weight targets for each sample.

Additionally, the system allows for the input of net weights, subtracting barrel weights during the weigh-out process; and net weights for large or unusual items found within the sample. Figure 3-5 shows a screenshot of the system as viewed after the weigh-out process of a sample from the study.

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Figure 3-5 City of Greeley Data Management Interface

3.7   DATA ANALYSIS

The following statistical measures have been calculated to determine the overall composition of City residential waste. Samples were first normalized by converting the individual sample data from weight to percentage.

◆ **Sample Mean**: The sample mean, or average, composition is considered the "most likely" fraction for each material category in the waste stream.

◆ **Margin of Error:** Margin of error is a statistical concept that estimates the degree of accuracy of the sample mean. The margin of error has been calculated as a percentage of the sample mean.

Consistent with industry standards, the margin of error is calculated at a 90 percent level of confidence.

4. RESULTS

Figure 4-1 provides the composition of residential refuse by material group. Organics, especially Yard Waste and Food Waste, comprise over one third of the aggregate inbound residential refuse in the City.

Figure 4-1 Residential Refuse Composition by Material Group
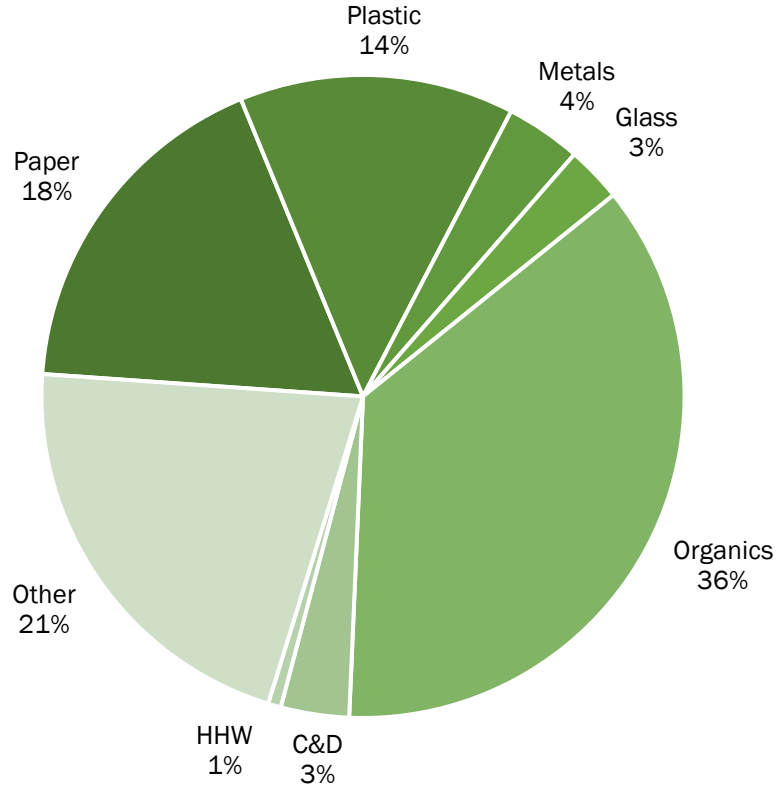
Figure 4-2 recasts the residential waste composition by recoverability class. This pie chart shows how much of the inbound City refuse material could theoretically be diverted into other programs, including nearly 20 percent of disposed refuse which could have been placed in a curbside recycling bin rather than in the trash. Implementation of a yard waste diversion program could further divert meaningful tonnage from the landfill each year. Furthermore, though not known to be common within the State of Colorado, some material categories listed as Not Readily Divertible could eventually be targeted for diversion in the in the region if processors come online and markets are developed for the recovered material. Examples include Untreaded/Clean Wood and aggregates such as Asphalt, Paving, Brick, Concrete, and Rock.

Figure 4-2 Residential Refuse Composition by Recoverability Class
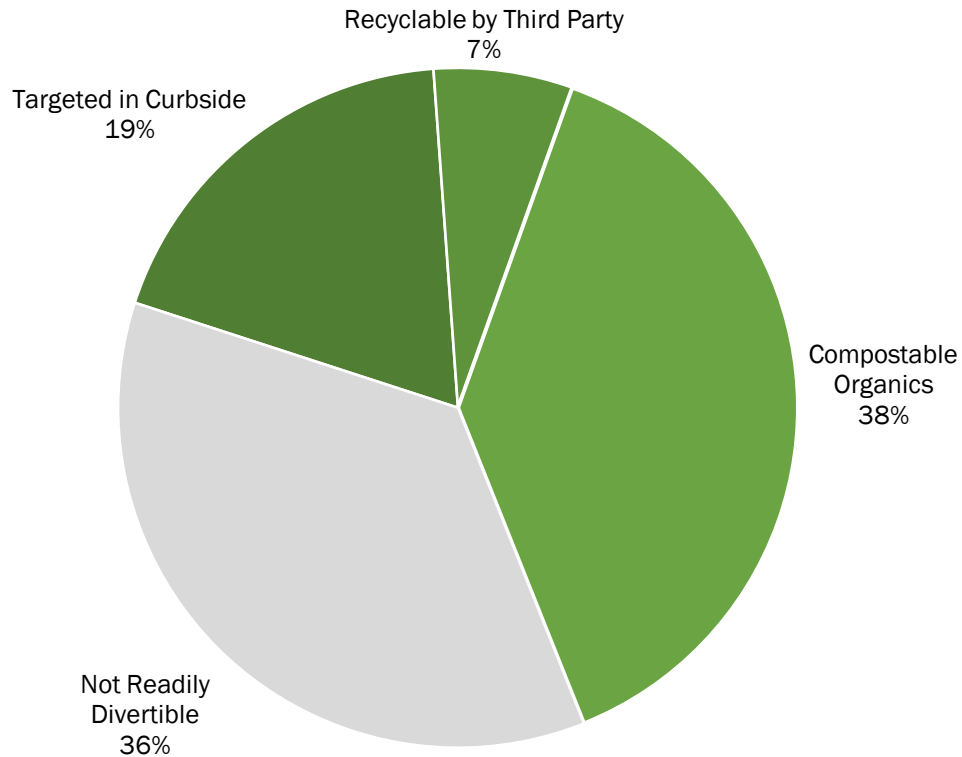
Figure 4-3 focuses on the top ten most prevalent material categories present in the City residential waste stream by weight. Notably, the top three material categories are all considered "Compostable Organics" for this study. The heaviest constituent in residential loads, Food Waste, tracks neatly with what is expected in residential loads, and appears as a similar percentage of the waste stream in cities with similar programs throughout the nation. Yard waste, while a significant percentage of the weight, is considered to fluctuate significantly throughout the year.

Figure 4-3 Top 10 Most Prevalent Materials in Residential Waste

Table 4-1 shows a detailed tabular summary of residentially generated refuse collected from the City by material category. This table shows mean composition, margin of error (calculated at a 90 percent level of confidence), as well as extrapolated annual per household weights based on customer data.

Table 4-1 Detailed Residential Refuse Composition

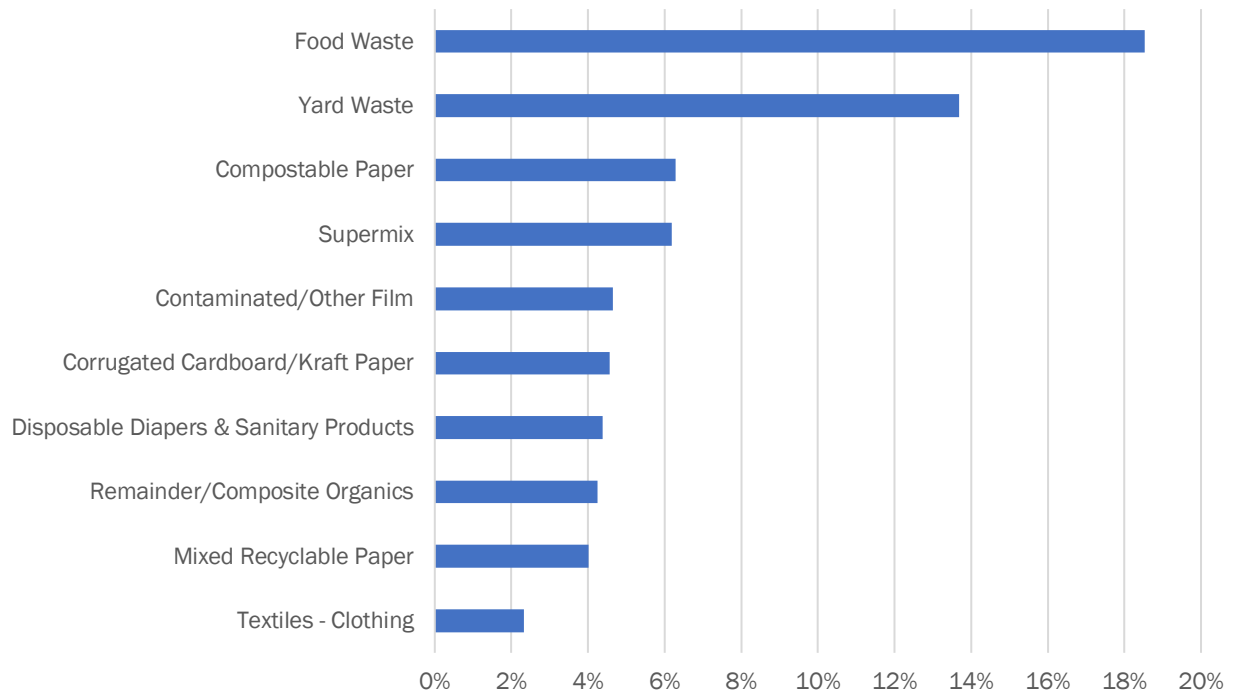| Material	Mean	MOE	Lbs/HH/Yr	Material	Mean	MOE	Lbs/HH/Yr
Paper	**17.7%**	**1.3%**	**392.6**	**Glass**	**2.8%**	**0.4%**	**62.1**
Corrugated Cardboard/Kraft Paper	4.6%	0.7%	101.4	Clear Glass Bottles/Jars	1.7%	0.3%	37.2
Newspaper	0.1%	0.1%	3.2	Brown Glass Bottles/Jars	0.4%	0.1%	8.5
High Grade Office Paper	0.1%	0.1%	2.9	Green Glass Bottles/Jars	0.2%	0.1%	3.4
Magazines and Catalogues	0.9%	0.2%	19.5	Remainder/Composite Glass	0.6%	0.2%	12.9
Aseptic & Gable Top Cartons	0.3%	0.1%	6.3	**Organics**	**36.5%**	**2.9%**	**809.4**
Mixed Recyclable Paper	4.0%	0.6%	89.1	Food Waste	18.5%	2.1%	411.4
Compostable Paper	6.3%	0.5%	139.5	Yard Waste	13.7%	3.3%	303.7
Remainder/Composite Paper	1.4%	0.3%	30.8	Remainder/Composite Organics	4.2%	0.8%	94.3
Plastic	**13.8%**	**0.9%**	**307.0**	**C&D**	**3.4%**	**0.9%**	**76.2**
PET (#1) Bottles/Jars	1.9%	0.2%	42.8	Wood - Treated/Painted/Stained	0.7%	0.2%	15.0
PET (#1) Non-bottle Containers	0.5%	0.1%	10.7	Wood - Untreated/Clean	0.4%	0.2%	8.0
HDPE (#2) Natural Containers	0.4%	0.1%	9.6	Drywall/Gypsum Board	0.5%	0.5%	11.1
HDPE (#2) Colored Containers	0.5%	0.1%	11.4	Asphalt Paving, Brick, Concrete, and Rock	0.3%	0.4%	7.5
Rigid Plastic Containers #3- #7	1.5%	0.1%	32.4	Carpet & Carpet Padding	0.3%	0.2%	7.0
Expanded Polystyrene	0.9%	0.1%	20.1	Remainder/Composite C&D	1.2%	0.6%	27.6
Clean Film Bags	0.5%	0.1%	10.2	**HHW**	**0.6%**	**0.3%**	**14.4**
Clean Commercial/Industrial Film	0.2%	0.1%	3.7	Household Hazardous Waste	0.3%	0.1%	7.3
Contaminated/Other Film	4.6%	0.4%	103.1	Sharps and Medical Waste	0.3%	0.3%	7.1
Durable/Bulky Rigid Plastics	1.2%	0.4%	26.1	**Other**	**21.3%**	**1.6%**	**473.8**
Remainder/Composite Plastic	1.7%	0.2%	36.9	All Electronics	2.0%	0.9%	45.3
Metals	**3.8%**	**0.4%**	**84.3**	Textiles - Clothing	2.3%	0.5%	51.6
Aluminum Containers	1.2%	0.2%	25.6	Textiles - Non Clothing	1.8%	0.4%	38.9
Aluminum Foils and Trays	0.3%	0.1%	7.2	Rubber/Leather Products	1.1%	0.3%	25.0
Other Non-Ferrous Metals	0.5%	0.2%	10.3	Tires	0.1%	0.1%	1.7
Steel Cans & Lids	0.8%	0.1%	17.9	Disposable Diapers & Sanitary Products	4.4%	0.7%	97.2
Other Ferrous Metals	1.0%	0.4%	22.5	Supermix	6.2%	0.7%	137.2
Oil Filters	0.0%	0.0%	0.8	Mattresses & Box Springs	0.1%	0.1%	1.5
				Bulky Materials	1.8%	1.0%	39.9
				Other Materials Not Elsewhere Classified	1.6%	0.7%	35.7
				Total	**100.0%**		**2,219.7**
				Samples Sorted	**73**		

Table 4-2 compares the composition of disposed refuse between seasons. Because Season 1 took place during the late winter, very little yard waste was found within collected samples. This greatly changed during the later spring season when yard waste was abundant. This large bump to one category also tends to reduce the incidence of other material category averages.

Table 4-2 Comparison of Residential Refuse Composition by Season

Material	Winter Mean	Summer Mean	Material	Winter Mean	Summer Mean
Paper	**21.7%**	**14.2%**	**Glass**	**2.9%**	**2.7%**
Corrugated Cardboard/Kraft Paper	6.0%	3.3%	Clear Glass Bottles/Jars	1.6%	1.7%
Newspaper	0.2%	0.1%	Brown Glass Bottles/Jars	0.6%	0.2%
High Grade Office Paper	0.3%	0.0%	Green Glass Bottles/Jars	0.2%	0.1%
Magazines and Catalogues	0.9%	0.8%	Remainder/Composite Glass	0.6%	0.6%
Aseptic & Gable Top Cartons	0.4%	0.2%	**Organics**	**27.0%**	**44.7%**
Mixed Recyclable Paper	5.4%	2.8%	Food Waste	18.9%	18.2%
Compostable Paper	7.0%	5.7%	Yard Waste	3.5%	22.5%
Remainder/Composite Paper	1.4%	1.3%	Remainder/Composite Organics	4.5%	4.0%
Plastic	**15.3%**	**12.5%**	**C&D**	**2.7%**	**4.1%**
PET (#1) Bottles/Jars	2.4%	1.5%	Wood - Treated/Painted/Stained	0.9%	0.5%
PET (#1) Non-bottle Containers	0.6%	0.4%	Wood - Untreated/Clean	0.3%	0.4%
HDPE (#2) Natural Containers	0.5%	0.3%	Drywall/Gypsum Board	0.7%	0.3%
HDPE (#2) Colored Containers	0.6%	0.5%	Asphalt Paving, Brick, Concrete, and Rock	0.1%	0.5%
Rigid Plastic Containers #3-#7	1.9%	1.0%	Carpet & Carpet Padding	0.0%	0.6%
Expanded Polystyrene	1.0%	0.8%	Remainder/Composite C&D	0.6%	1.8%
Clean Film Bags	0.4%	0.5%	**HHW**	**0.8%**	**0.5%**
Clean Commercial/Industrial Film	0.2%	0.1%	Household Hazardous Waste	0.2%	0.4%
Contaminated/Other Film	5.1%	4.3%	Sharps and Medical Waste	0.6%	0.1%
Durable/Bulky Rigid Plastics	0.8%	1.4%	**Other**	**25.0%**	**18.1%**
Remainder/Composite Plastic	1.8%	1.6%	All Electronics	2.0%	2.0%
Metals	**4.5%**	**3.1%**	Textiles - Clothing	2.7%	2.0%
Aluminum Containers	1.5%	0.9%	Textiles - Non Clothing	1.6%	1.9%
Aluminum Foils and Trays	0.4%	0.3%	Rubber/Leather Products	0.7%	1.5%
Other Non-Ferrous Metals	0.7%	0.2%	Tires	0.1%	0.1%
Steel Cans & Lids	1.0%	0.6%	Disposable Diapers & Sanitary Products	4.9%	3.9%
Other Ferrous Metals	0.9%	1.1%	Supermix	7.8%	4.8%
Oil Filters	0.1%	0.0%	Mattresses & Box Springs	0.0%	0.1%
			Bulky Materials	2.4%	1.3%
			Other Materials Not Elsewhere Classified	2.9%	0.4%
			Total	**100.0%**	**100.0%**
			Samples Sorted	**34**	**39**

5. CONCLUSIONS & RECOMMENDATIONS

This inaugural residential waste characterization study captured a statistically representative snapshot of the City's residential waste stream generation and composition. The data contained herein are foundational to waste diversion planning activities to be undertaken by the City and highlight opportunities for reducing waste to landfill from the residential sector.

MSW Consultants offers the following recommendations for the City's consideration as it continues its path to optimized waste diversion:

◆ **Establish Better Hauler Reporting**: Haulers in the City do not currently report their residential waste tonnage on a consistent basis. On the strength of better managing what is measured, the City should establish formalized and regular reporting of residential and commercial refuse and recycling generation to complement audits like this one. Doing so gives the City greater ability to gauge progress on diversion targets and other key metrics for program development.

◆ **Characterize the Commercial Waste Stream**: Residentially generated waste typically contributes only half of the overall generation in a given city or region. Commercially generated waste is a major source of waste to landfills, and the City may wish to consider expanding its waste composition studies in the future to incorporate the commercial waste stream.

◆ **Consider Options for the Diversion of Seasonal Yard Waste**: During the summer season of the study, more than one-fifth of residential waste was found to be yard waste, especially grass clippings. Diversion of such material could provide a notable reduction in inbound tonnages, at least during months of high anticipated generation in the spring and fall. Seasonal curbside collection options for leaves and grass clippings are popular solutions for other communities in the US and are likely the best solution for maximizing diversion of yard wastes. Expansion and promotion of green waste drop off centers as well as the promotion of "grasscycling" (the practice of simply leaving trimmings on the lawn to act as a natural fertilizer), can also be expected to reduce landfilled yard waste.

◆ **Characterize Residential Recyclables to Estimate Recycling Capture Rates**: Landfilled waste composition provides some insight into the recyclable paper, containers, and other recyclable constituents that are being disposed, and in that sense are informative to the success of local recycling programs. However, a far more informative assessment of recycling performance can be made if the residential recycling stream is quantified and if accurate composition data are also obtained. Armed with a full characterization of disposed waste and diverted recyclables, the City can calculate its recycling capture rates for individually targeted commodities. A capture rate identifies the percentage of a targeted recyclable material that is properly collected through appropriate recycling programs (and hence "captured" in the recycling program)

◆ **Update this Study**: History has shown that the waste stream is constantly changing due to macroeconomic factors, regulatory changes, and consumer behavior changes. Waste composition studies become obsolete in three to five years, and it is therefore recommended that the City update this study on an intermittent basis as a means of tracking its diversion performance and maintaining an accurate understanding of its disposed residential waste stream.

◆ **Consider Regulatory Changes for Collection:** As a consequence of the City's unregulated collection system, the City is currently impaired in its efforts to meaningfully influence diversion. If the City is to achieve its highest diversion rate possible, the City might wish to consider migrating to a system of exclusive service districts. Exclusive service districts, when managed via franchise(s) or even direct service contract(s), will provide the City greater control over services offered, collection requirements, resident education, diversion performance, and reporting.

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APPENDIX A – MATERIAL CATEGORIES & DEFINITIONS

Material Group	Material Category	Material Category Definition
Paper	Corrugated Cardboard/Kraft Paper	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.
	Newspaper	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.
	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.
	Magazines and Catalogues	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 newpaper inserts.
	Aseptic & 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, maybe any shape, and may include a plastic pour spout as part of the carton.
	Mixed Recyclable Paper	Recyclable paper other than the paper types mentioned above. Examples include junk mail, manila folders, manila envelopes, index cards, white envelopes, white window envelopes, notebook paper, carbonless forms, groundwood paper, softcover books, and deep-toned or fluorescent dyed paper.
	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.
	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.
Plastic	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.

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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.
HDPE (#2) Natural Containers	Natural colored HDPE bottles. This plastic is usually either 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.
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.
Rigid Plastic Containers #3, #4, #5, #6, #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.
Expanded Polystyrene	Food and Non-food packaging. Includes clamshell "Styrofoam" food containers, as well as cups, plates, and bowls. Includes finished products made of expanded polystyrene such as block Styrofoam padding and packing peanuts.
Clean 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.
Clean Commercial/Industrial Film	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.
Contaminated/Other Film	Plastic film or bags that are non-recyclable.Examples include garbage bags, and other types of plastic bags (sandwich bags, zip (recloseable) bags, produce bags, frozen vegetable bags), juice pouches, painting tarps, food wrappers such as candy-bar wrappers.

	Durable/Bulky Rigid Plastics	Plastic items other than containers or film plastic, 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 flower pots of 1 gallon size or larger, lawn furniture, large plastic toys, tool boxes, first aid boxes, and some sporting goods, CDs and their cases, plastic housewares such as durable (not single-use) dishes, cups, and cutlery.
	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).
Metals	Aluminum Containers	Aluminum containers for food or beverage. Also includes aluminum cat food containers.
	Aluminum Foils and Trays	Non-container aluminum products such as aluminum foil or aluminum food trays. Does not include items significantly contaminated with food or other material.
	Other Non-Ferrous Metals	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.
	Steel Cans & Lids	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.
	Other Ferrous Metals	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.
	Oil Filters	Oil filters and products designed to remove contaminants from engine oil.
Glass	Clear Glass Bottles/Jars	Includes all glass bottles and jars, made using clear glass. Examples include beer 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.
	Brown Glass Bottles/Jars	Includes all glass bottles and jars, made using brown glass. Examples include beer 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.
	Green Glass Bottles/Jars	Includes all glass bottles and jars, made using green glass. Examples include beer 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.
	Remainder/Composite Glass	Glass products or components of any color that could not be considered a bottle or jar. Drinking glasses, vases, candle jars, window glass, etc. are some of the many items found within this category. As with the other glass

		categories, if signicicant non-glass materials are attached, then it shall be sorted to that material category instead.
Organics	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.
	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.
	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.
C&D	Wood – Treated/Painted/Stained	Wood that contains an adhesive, paint, stain, fire retardant, pesticide, or preservative. Does not include wood furniture.
	Wood – Untreated/Clean	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 include land clearing debris or yard waste prunings and trimmings. The presences of nails or screws are acceptable.
	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.
	Asphalt Paving, Brick, Concrete, and Rock	Includes asphalt paving 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.
	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.
	Remainder/Composite 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.
HHW	Household Hazardous Waste	Hazardous household items containing paints, thinners, solvents, vehicle equipment fluids, cleaners, pesticides/herbicides and fertilizers. Includes fluorescent bulbs and CFLs, light ballasts, and mercury-containing devices.
	Sharps and Medical Waste	All forms of medical waste including "sharps" defined as any device or object intended to puncture or lacerate the skin in a medical capacity.
Other	All Electronics	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.
	Textiles - Clothing	Includes clothing items. This category includes footwear that is mostly cloth or leather. Does not include carpeting.
	Textiles - Non-Clothing	Non-Clothing textile products such as curtains, blankets, stuffed animals, and other cloth material. Does not include carpeting.

	Rubber/Leather Products	Finished products and scrap materials made of natural and synthetic rubber, such as bathmats, inner tubes (not tires), rubber hoses, and foam rubber. Includes rubber gloves and footwear (if predominantly rubber). This category does not include vehicle tires.
	Tires	Rubber tires for automobiles and other vehicles. Includes rubber recreational vehicles, motorcycles, bicycles and more.
	Disposable Diapers & Sanitary Products	Adult and baby disposable diapers, and feminine hygiene products.
	Supermix	Small mixed fragments 2" and smaller, and includes miscellaneous fines (paper, plastic, glass, organics, etc.), sand, and dirt.
	Mattresses & Box Springs	Mattresses of all construction types including all-foam constructions (PE and Latex), bonnel and pocket-coil spring mattresses. Includes all varieties of box springs as well.
	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.
	Other Materials Not Elsewhere Classified	Any other type of waste material not listed in any other sort category. Includes cosmetics, shampoos, lotions, etc.

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