ROARING FORK VALLEY

COMPREHENSIVE WASTE DIVERSION PLAN

PHASE I

PREPARED FOR

PITKIN COUNTY & CITY OF ASPEN

April 13, 2016

PREPARED BY

Weaver Consultants Group

LBA ASSOCIATES

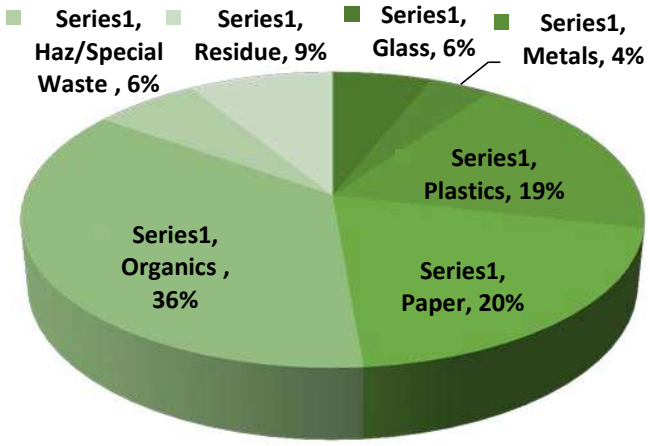
EXECUTIVE SUMMARY

The Roaring Fork Valley Comprehensive Waste Diversion Plan (Plan) was undertaken by Pitkin County and the City of Aspen to maximize municipal solid waste (MSW) and construction and demolition (C&D) waste diversion in the Roaring Fork Valley (Valley) through 2027 utilizing a strategy that involves incentives, regulatory enforcement, and public involvement. The planning area extends from Carbondale in Garfield County to the City of Aspen. The Plan includes two phases; Phase I has been completed and is reported in this document, and Phase II will be started later in 2016.

Data collection revealed that approximately 38,200 tons of MSW is managed in Pitkin County annually; C&D quantities can more than double the total waste managed at the Pitkin County Solid Waste Center (PCSWC), and Carbondale quantities were not available. A majority of trash and compost is managed at the PCSWC, while Carbondale's MSW is likely managed at both the PCSWC and the South Canyon Landfill.

An audit of the Pitkin County MSW trash conducted in 2015 showed that 75% of the MSW stream during the audit periods was comprised of organic, paper, and plastic materials (see Figure ES-1). Over 36% of the stream included food, yard, and other organic waste. These results indicated that more than half of Pitkin County trash was recoverable through existing recycling and organic recovery programs.

Figure ES-1: 2015 Pitkin County Trash Composition (percent by weight)



An audit of single-stream recyclables at the Rio Grande and Pitkin County drop sites revealed cardboard and glass compositions equal to nearly one-third of all single-stream recyclables measured. These results indicate an opportunity to target these materials, both of which have collection and contamination challenges.

Phase I also consisted of a comprehensive public process to obtain input on waste diversion barriers and opportunities in the Valley. Stakeholders included businesses, property managers, haulers, governments, non-profits, and citizens. Their input, together with audit results, helped to inform a selection of waste diversion improvement options for future evaluation in Phase II.

Through a collaboration of municipal leaders, a short-list of priority (Tier #1) options was deemed worth further evaluation in Phase II. The following options will include a combination of incentives and regulations, and will be supported by appropriate enforcement measures:

- C&D materials diversion;
- Commercial and special event recycling and organics recovery;
- Yard waste disposal ban;
- Full service recyclable drop sites in Basalt, Snowmass Village, and Carbondale;
- Hauler curbside collection policy that encourages recycling and requires reporting;
- Cardboard disposal ban with backhaul options out of the Valley;
- Source-separation of glass from drop-off and/or curbside collections; and
- Collection at commercial sites where single-use recyclables are provided to customers.

These options will be evaluated in Phase II to quantify the potential to reduce the environmental footprint and create jobs, as well as to ascertain costs and cost savings. Once completed, Phase II will provide an implementation strategy that involves the permanent and vacationing population, creates an even playing field for affected parties, encourages practical public/private partnerships, and supports quantified waste diversion goals over the next 10 years. Phase II of this project will be initiated later in 2016 and will be completed in 2017.

TABLE OF CONTENTS

EXECUTIVE SUMMARY ES-1

1 BACKGROUND 1
- 1.1 Plan Objectives 1
- 1.2 Plan History 1
- 1.3 Planning Area 2
- 1.4 Population 3
- 1.5 Diversion Economics 3

2 PUBLIC PROCESS 5
- 2.1 Meetings 5
- 2.2 Stakeholder Observations 6

3 EXISTING WASTE SYSTEM 7
- 3.1 Background 7
- 3.2 Solid Waste System 7
  - 3.2.1 Collection 7
  - 3.2.2 Solid Waste Management Facilities 8
  - 3.2.3 Administrative Policy 9
- 3.3 Existing Waste Quantities 10
  - 3.3.1 Quantity Assumptions 10
  - 3.3.2 Solid Waste Quantities 10

4 WASTE COMPOSITION 11
- 4.1 Trash Audit 12
  - 4.1.1 2009 vs. 2015 Results 13
  - 4.1.2 2015 Summer vs. Fall Composition 14
  - 4.1.3 Municipal Results 17
- 4.2 Recyclables Audit 18
  - 4.2.1 Summer vs. Fall Results 18
- 4.3 Recommendations for Future Programs and Policy 19

5 POTENTIAL WASTE MANAGEMENT IMPROVEMENTS 20
- 5.1 Future Diversion Improvements 20
  - 5.1.1 Universe of Potential Options 20
  - 5.1.2 Prioritized List of Waste Diversion Options 21
- 5.2 Next Steps 23

6 LIMITATIONS 24

FIGURES

Figure ES-1 2015 Pitkin County Trash Composition ES-2
Figure 1 Roaring Fork Valley Planning Area 2
Figure 2 PCSWC Waste Sorting Area and Weigh Station 12
Figure 3 Comparison of 2009 and 2015 Trash Composition 13
Figure 4 Summer and Fall Trash Composition by Material Category 14
Figure 5 Summer and Fall Trash Composition by Material Type 15
Figure 6 Aggregated Trash Composition in Municipal Samples 17
Figure 7 Single-Stream Composition 18
Figure 8 Types of Potential Waste Diversion System Options 20

TABLES

Table 1 Planning Area Population 3
Table 2 Administrative Policies & Programs 9
Table 3 Annual Pitkin County Municipal Solid Waste Quantities 11
Table 4 Annual Pitkin County C&D Quantities 11

APPENDICES

Appendix A List of Plan Stakeholders
Appendix B Stakeholder Observations
Appendix C MSW Audit Categories and Descriptions
Appendix D Waste Audit Results – Raw Municipal Data
Appendix E Universe of Waste Diversion Options

LIST OF ABBREVIATIONS

C&D	Construction and demolition
CORE	Community Office for Resource Efficiency
HDEP	High-density polyethylene
HHW	Household hazardous waste
LBA	LBA Associates, Inc.
MRF	Materials recovery facility
MSW	Municipal solid waste
PCSWC	Pitkin County Solid Waste Center
PET	polyethylene terephthalate
Plan	Roaring Fork Valley Comprehensive Waste Diversion Plan
PPCD	Pounds per capita-day
SCRAPS	City of Aspen/Pitkin County restaurant and residential compost program
TPY	Tons per year
Valley	Roaring Fork Valley
WCG	Weaver Consultants Group
WMC	Waste Management of Colorado

1 BACKGROUND

The Roaring Fork Valley Comprehensive Waste Diversion Plan (Plan) was undertaken by Pitkin County and the City of Aspen, to evaluate opportunities for the environmentally and economically sustainable reuse, recycling, and composting over a 10-year planning horizon that extends from 2017 through 2027.

Weaver Consultants Group (WCG) and LBA Associates, Inc. (LBA) assisted Pitkin County, Aspen, and other parts of the Roaring Fork Valley (Valley) with this Plan. It is intended that the objectives of this Plan will be realized through two separate phases. This document sets out the objectives and findings of Phase I.

1.1 Plan Objectives

The Plan objectives were developed by representatives of both Pitkin County and the City of Aspen. Both operating entities are interested in making collaborative waste diversion improvements in the Valley. The primary objectives of the Plan include the following:

- Maximizing and identifying opportunities for additional waste diversion. For the purposes of this Plan, diversion is defined as sustainable reuse, recycling, and composting. Diversion will consider municipal solid waste (MSW), including food waste, and non-MSW, such as construction and demolition (C&D) debris.
- Leveraging the value of public awareness and participation.
- Incorporating appropriate incentives and enforcement.
- Developing an implementation strategy and goals for both the mid-point of the planning period (2022) and the end-point (2027).

1.2 Plan History

Phase I was conducted from mid-2015 to early-2016 and included an initial public process (Section 2), an assessment of the existing waste management system (Section 3), and trash/recycling composition audits (Section 4). The key outcome of this phase was a prioritized listing of policy, program, and infrastructure improvements (Section 5).

If approved to move forward, Phase II will begin late in 2016 and will analyze those Phase I improvements that combine the greatest feasibility for implementation and waste diversion success. Developing an implementation plan for these improvements and establishing measurable diversion goals will be developed as part of Phase II work.

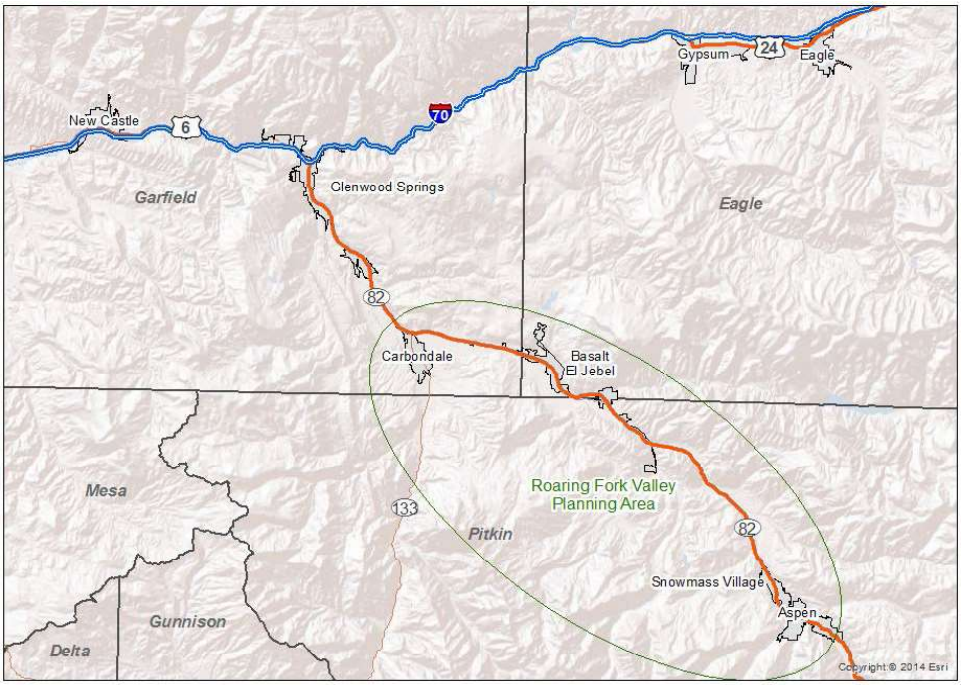
1.3 Planning Area

The planning area includes that portion of the Valley that extends from Carbondale in the northwest to Aspen in the southeast (see Figure 1). It includes all of Pitkin County, and parts of Garfield and Eagle Counties. The area is located about 170 miles from Denver and is surrounded by mountains; the Elk Mountains in the southwest are home to the Aspen Skiing Company resorts, while Mount Sopris dominates the opposite end of the Valley. The only all-season access is State Highway 82, which extends from Glenwood Springs about 45 miles to Aspen.

Pitkin County is a 943-square mile area; 83% of this land mass is Federal public lands. The Valley is bisected by State Highway 82, which originates at Interstate 70 in Glenwood Springs, passes through Aspen, and crosses Independence Pass into Lake County. In the winter, Independence Pass is closed and Highway 82 is not continuous beyond Aspen. The City of Aspen, Town of Basalt[1], and Town of Snowmass Village are the only incorporated areas in the County.

The Town of Carbondale is a 2-square mile municipality located mid-valley at the southeastern edge of Garfield County. It is situated on the bank of the Roaring Fork River and adjacent to State Highway 82, about 15 miles from the Interstate 70 and 30 miles from Aspen.

Figure 1: Roaring Fork Valley Planning Area



[1] Part of the Town of Basalt is also located in Eagle County.

1.4 Population

Population is important, as it ties directly to the quantities of waste generated and managed. Table 1 tabulates the permanent population of the Pitkin County/Carbondale planning area. The projected 2017 population of 25,200 is expected to be less than 1% of the population of Colorado, at that time.

Table 1 also provides projected populations over the 10-year planning horizon. As shown, between 2017 and 2027 the combined population of Pitkin County and Carbondale increases from 25,200 to 30,900, an increase of about 23%. These numbers do not reflect seasonal variations, which are anecdotally observed to be significant[2].

Table 1: Planning Area Population (rounded to the nearest 100 people)

Planning Area	Estimated Populations*		
	2017	2022	2027
Aspen	7,100	7,800	8,700
Basalt	1,000	1,100	1,200
Snowmass Village	3,000	3,300	3,700
Unincorporated Pitkin County	7,200	7,900	8,800
Total - Pitkin County	**18,300**	**20,200**	**22,300**
Total - Carbondale	**6,900**	**7,600**	**8,600**

*Based on the Colorado State Demography Office, October 2015 estimates.

1.5 Diversion Economics

The economics of diversion is complicated. Diversion variables at the local level include ease of customer use with accessible collection, and clear, consistent information; proximity to processing facilities and end markets; and cost of local disposal. The quantity of tons diverted as a result of these local variables also impact economics; as diversion levels increase, relative costs improve. Predicting diversion cost and revenues is challenging as they are also impacted by many factors communities cannot control, such as global oil prices, transportation, and the strength of the U.S. dollar. Global factors, in particular, fluctuate over time and cannot be counted on beyond the constancy of a cyclical secondary materials market economy. One of the economic difficulties with diversion is global factors changing in a shorter cycle than communities can react to.

Despite these variables, there are some characteristics that make individual materials in our waste streams more or less profitable than others. Examples include the following:

[2] Aspen estimates that its population swells to between two and three times its permanent population in the winter and summer seasons, respectively, and some businesses observe a 50/50 local/tourist customer base overall.

- Cardboard is typically a high-value fiber with a waste stream content level on the rise, as consumers do more online shopping, but it is bulky to transport and easily contaminated by moisture when stored outdoors or commingled. There are currently cardboard markets as close as New Mexico.
- Newspaper and low-grade papers are moderate-value fibers with a waste stream content that is declining, as consumers do more online reading. These materials are also subject to contamination when commingled. Most paper mills used to process recycled newspaper are located on the west coast of the United States.
- Glass is often considered by the public as "the" recyclable, but is a low-value material (especially mixed color glass) that is expensive to transport. Glass is also a major contaminant of other materials when commingled; some communities have removed glass form their single-stream for this reason. There is a Colorado market for amber glass; however, at present, revenues do not cover the costs for collection and transportation.
- Plastic resins #1, polyethylene terephthalate (PET), and plastic resins #2, high-density polyethylene (HDPE), are high-value materials in most markets (except when oil prices are low), but are challenging to transport due to their low weight/high volume nature. Other plastic resins have lagging markets. Also, mixed plastics present a challenge for the public that can result in high levels of contamination. There is currently a Denver market for HDPE only.
- Metals can typically be relied on for a consistently high-value, although the downturn in China's economy has impacted pricing in recent months. However, used beverage containers have the same transportation issues as plastics. Scrap metal can also be expensive to transport due to bulkiness. There are steel markets in Pueblo.
- Food and yard wastes are most commonly diverted in Colorado, with a composted product as the typical end use. Composting is most economical if conducted close to the point of collection. Processing is cost-intensive, however, and may or may/not compete effectively with landfill prices. Class 1 compost operations are located in Pitkin and Garfield Counties.

It is important to remember that most recyclable collections in the Valley are commingled (either dual-stream with paper and containers or single-stream with all materials mixed together). Moving toward single-stream collection has grown in popularity due to customer ease and lower hauler costs. Commingling impacts the quality of materials and cost of processing on the back end, however. Food and yard waste are generally collected separately.

Phase I does not attempt to quantify diversion economics specific to the Valley. However, this is critical to evaluating the feasibility of future diversion options, and will be addressed in Phase II.

2 PUBLIC PROCESS

An inclusive public process was conducted throughout Phase I to gain information and input from as many waste generators, recyclers, service providers, and program managers as possible. This information was key to developing a future waste diversion strategy that is practical and effective, supported by stakeholders, and avoids putting an undue burden on individual companies or governments.

2.1 Meetings

The public process began with the meetings informally during the collection of existing system information and conducting the waste composition audits in 2015, and extended through formal stakeholder and government meetings in late 2015 and early 2016.

Public stakeholder meetings included:

- Group meeting for restaurants, grocers, and liquor stores – November 9, 2015;
- Group meeting for managers of single- and multi-family properties – November 10, 2015;
- Aspen Public Meeting – February 3, 2016;
- Basalt/Carbondale Public Meeting – February 3, 2016;
- Town of Carbondale Environmental Board and staff meeting – March 8, 2016;
- Group meeting with representatives of Aspen, Basalt, Carbondale, Snowmass Village, and Pitkin County to review future waste diversion options - March 8, 2016; and
- Additional face-to-face and teleconference meetings with individual haulers, municipalities, grocers, liquor stores, property managers, the Aspen Skiing Corporation, Colorado Mountain College, the Basalt Thrift Store, Habitat for Humanity, the Community Office for Resource Efficiency (CORE), and the South Canyon Landfill.

Notification for most of the meetings was placed in the local papers, on the City of Aspen and Pitkin County internet sites, in the Basalt and Snowmass Village Chamber of Commerce newsletters, as well as through placement of flyers in local Aspen restaurants and through electronic mail blasts to Aspen, Pitkin County, and the Plan's distribution lists. The intent was to widely advertise the Plan's development and encourage as much participation from all residential and commercial stakeholders as possible.

The meetings generally included a presentation of baseline findings and waste composition results, and openly sought a discussion of waste diversion obstacles and opportunities. Appendix A includes a list of participating stakeholders.

2.2 Stakeholder Observations

Numerous stakeholder meetings were held throughout Phase I. The purpose of the stakeholder meetings was to gather input on the current status of perspectives in the Valley. This input was used, together with other system information, to identify potential waste improvement opportunities. These perspectives are broadly characterized as follows:

- Education and Communication – Education and communication considerations centered around programs currently in place; lack of customer awareness; need for focus on renters, second home-owners, and tourists; and program/policy inconsistency between the City of Aspen, Pitkin County, and other towns.
- Commercial Generators – Commercial generators' concerns centered on staffing; need for lodging, restaurants, retailers, and multi-family/homeowner properties to provide diversion opportunities; having adequate space to manage waste streams; cultural barriers with visitors; and the need for incentives and recognition.
- Collection – Collection concerns centered on inconveniences and environmental impacts related to equipment (trucks, collection bins, and limited space); lack of consistency in hauler services; differences between single-stream and dual-stream collection; accessibility; as well as customer messaging at drop sites.
- Operational Issues – Operational concerns centered on a general lack of program enforcement; cost of services; lack of residential participation; glass as a contaminant in single-stream, including the need for closer recyclables processing options; and bear-proof containers for organics.

Appendix B includes a more detailed tabulation of stakeholder observations.

3 EXISTING WASTE SYSTEM

Data collection for Phase I of the Plan included collecting available information, obtaining an understanding of the various solid waste programs, policies and practices in the Valley, and finally, surveying the infrastructure used for solid waste services.

3.1 Background

Generally, wastes are broadly characterized into MSW and non-MSW streams. MSW is that waste generated by residential and commercial entities. Non-MSW is generally generated by industrial entities, and primarily includes C&D debris generated by road and building contractors. C&D debris was not characterized in Phase I, but will be a component of Phase II. This phase of the Plan focuses on the MSW portion of the waste stream generated and disposed of within Pitkin County.

3.2 Solid Waste System

3.2.1 Collection

Collection is privatized throughout the Valley, with the exception of the Town of Snowmass Village. The primary private haulers that provide a mix of trash and recyclables collection services include Mountain Waste & Recycling (MWR) (formerly Intermountain Waste Solutions and Mountain Refuse, Inc.), Waste Management of Colorado[3] (WMC), Alpine Trash, Waste Inc., Garbage Solutions, and VIP Trash. MWR and Evergreen Events also collect organics. Collection services can generally be characterized as follows:

- Most curbside recyclables collection is single-stream – MWR and VIP Trash provide dual-stream to some accounts (especially multi-family customers);
- Most drop site recycling is single-stream[4];
- Both yard and food waste is accepted in many of the curbside organics collections – the Rio Grande drop site accepts yard waste in the spring and fall; and
- Snowmass Village provides curbside and drop site trash and single-stream recycling services to residential and commercial customers.

[3] In 2014, MWR and WMC hauled approximately 87% of the waste and recyclable material managed at the PCSWC.

[4] Most drop sites are used by generators beyond the area where they are located (recent surveys show that up to 40% of Rio Grande users are from outside of Aspen and 20% of Basalt users are from outside of Basalt).

3.2.2 Solid Waste Management Facilities

Pitkin County owns the PCSWC that serves as the primary solid waste management facility for the southern end of the Valley. PCSWC operations include:

- Disposal for MSW and non-MSW wastes[5,6];
- Drop and swap operation – materials are used by the County and other local residents;
- Class 1 Composting facility – mulch, compost, and soil is sold to local users;
- Single-stream recyclables/metal drop site and transfer operation – materials are hauled out of the Valley for processing and sale; and
- Household hazardous waste (HHW)/electronic waste collection center – materials also managed outside of the Valley.

Other solid waste management facilities operated in the Valley include the following:

- The City of Aspen and Pitkin County jointly operate the 24/7 Rio Grande recyclables drop site in Aspen. This facility accepts single-stream recyclables[7], utilizes a contract hauler, and materials are processed outside of the Valley.
- Pitkin County operates a drop site and is serviced twice monthly in Redstone. This facility also accepts single-stream recyclables, utilizes a contract hauler, and materials are processed outside of the Valley. This facility has limited hours.
- The Town of Basalt hosts a recycling drop site owned and operated by WMC. Recyclables are transferred outside of the Valley. The future use of this site for recyclables collection in 2016 is unknown[8].
- The Town of Snowmass operates several small trash and recycling drop sites that serve its residential population, and hauls all materials to the PCSWC.
- The Town of Carbondale's Public Works Department operates a paper/cardboard and bi-annual yard waste recycling drop site at its facility during regular business hours.
- MWR has a mixed-use solid waste transfer station located in the Town of Carbondale; however, the facility is not currently available for public use.

---

[5] The PCSWC tipping fees reflect mountain operations. Residential recycling is free but commercial haulers pay a relatively low tipping fee and are limited in tons accepted. Source-separation of soil, rock, asphalt, organics, metals, and recyclables is encouraged with lower tipping fees.

[6] The MSW landfill has an approximate lifespan of 15 years. If the landfill is expanded, the life span of the landfill may be extended, although this potential is expected to be limited.

[7] Rio Grande also accepts source-separated glass, as well as seasonal yard waste and Christmas trees.

[8] The Town of Basalt is considering a solid waste collection ordinance that may address support for the WMC recycling drop site.

Solid waste management facilities located outside the Valley planning area that may manage some of the area's waste stream include:

- South Canyon Landfill and Class I Compost Facility in Glenwood Springs;
- City of Glenwood Springs Recyclables Drop Site (public) in Glenwood Springs;
- West Garfield County Landfill in Rifle;
- Eagle County Landfill, Materials Recovery Facility (MRF) (dual-stream recyclables processing) and HHW center in Wolcott; and
- Summit County Landfill, Recyclables Transfer Station and Compost Facility in Keystone.

3.2.3 Administrative Policy

In addition to the physical infrastructure described above, there are several public policies that create incentives for recycling, encourage materials use that minimize the environmental footprint, and prohibit disposal of some materials. There are also numerous public and non-profit programs that create awareness and collect a wide variety of hard-to-recycle and hazardous waste materials. Table 2 includes a partial listing of the Valley's policies and programs.

Table 2: Administrative Policies & Programs

Policies
Aspen hauler/recycling ordinance (for residents - volume-based trash rates, bundled with recycling; for businesses - trash bundled with recycling; tonnage reports for all collections)
Aspen yard waste disposal ban
Aspen plastic bag use bans (paper bag fee)
Carbondale plastic bag use ban (paper bag fee)
Carbondale recycling ordinance (under development)
Pitkin County hauler/recycling ordinance (trash bundled with recycling offered for an additional fee)
Programs
Aspen & Pitkin County SCRAPS organics recovery program for restaurants and other commercial generators, as well as residents
Aspen Police Department pharmaceuticals collection
City Market & Whole Foods food donation
City Market plastic bag recycling
Clothing and textile reuse/recycling facilities (Basalt Thrift Store & several others)
Habitat for Humanity ReStore household goods and furniture reuse/recycling facilities
Periodic public hazardous waste and electronic waste collections in Aspen and Carbondale
Alpine Bank cell phone and light bulb recycling

Programs (continued)
Xcel Energy & Holy Cross refrigerator recycling
Millennium Pack 'n Ship packaging material recycling
UPS packaging material recycling
Tires, oil and anti-freeze recycling at tires and service outlets (Big O Tires & others)
Paint recycling drop locations at PCSWC, Sherwin Williams (Aspen), Ace Hardware (Carbondale)
Ski Industry Association snow sports equipment recycling
CORE Waste Free Roaring Fork program

3.3 Existing Waste Quantities

Determining the quantity of solid wastes currently generated, collected, and diverted is needed to identify diversion opportunities and for establishing a baseline against which future progress can be tracked. This subsection discusses quantities as they relate to the specific study area.

3.3.1 Quantity Assumptions

In the initial stages of any planning process, it is often challenging to obtain waste generation quantities. This is due to a variety of considerations, including wastes that are not measured and private entities that may not wish to disclose collected information to the public domain. The Valley is no exception; while both the City of Aspen and Pitkin County require some quantity reporting by haulers, data is generally incomplete. To address this limitation, it has been assumed for initial planning purposes that all Pitkin County waste is managed at the PCSWC, along with 50% of the waste generated in Carbondale. The other 50% of Carbondale waste is assumed to be managed at Garfield County facilities or outside the Valley. Although private haulers, recyclers, and composters confirm transportation of waste across Pitkin County boundaries, the quantities and frequency of importing and exporting are unknown.

3.3.2 Solid Waste Quantities

Table 3 summarizes available data describing annual MSW quantities for Pitkin County in 2014/2015. This data was provided by several sources, including the PCSWC; the City of Aspen; and several haulers, grocers, and non-profit program managers. As noted above, there is no quantity data available for the Town of Carbondale as all curbside collections are privatized and most materials are hauled to Garfield County (tons are not tracked by generator area at the South Canyon Landfill).

Table 3: 2015 Annual Pitkin County Municipal Solid Waste Quantities (rounded to nearest 100 tons unless otherwise noted)

Material	Tons
MSW Reused, Recycled & Composted Materials	
Recyclable Paper/Containers	6,500
Textiles/Household Goods	500
Organics	8,500
Donated Food	<100
Metals	400
Tires	<100
E-Waste/HHW	200
Trash	22,800
Total Municipal Solid Waste[a]	38,200
MSW Generation[b] (pounds/capita-day)	11.8 ppcd
Diversion (% by weight)	42%

[a] Total as reported by Pitkin County. Rounding errors account for mathematical differences in totals.

[b] Based on the 2015 permanent population of 17,800, although much of the waste is generated by visitors and second homeowners (transient population data is not available).

Non-MSW quantities in Pitkin County are not as well defined as MSW, but have been observed to consist of primarily C&D materials. C&D material quantities over the past 3 years are provided in Table 4 below. Incoming C&D materials are typically very cyclical and the volume of C&D is largely dependent on the state of the local economy.

Table 4: Annual Pitkin County C&D Quantities (rounded to the nearest 100 tons)

Year	Non-Diverted Quantity	Diverted Quantity[a]
2014	33,500 tons	62,500 tons
2015	41,300 tons	112,200 tons

[a] Diverted quantity represents material either 1) beneficially reused at the landfill under the CDPHE Solid and Hazardous Waste rules or 2) brought in and processed at the landfill and resold.

Generally, it is more difficult to generate quantitative data on C&D wastes in the course of short-term waste audit studies, as incoming C&D material is dependent on demolition projects, which can be sporadic. In addition, C&D waste is typically bulky and dangerous, which creates difficulties for individuals to sort, weigh, and categorize. It is anticipated that Phase II will address C&D wastes to the extent possible.

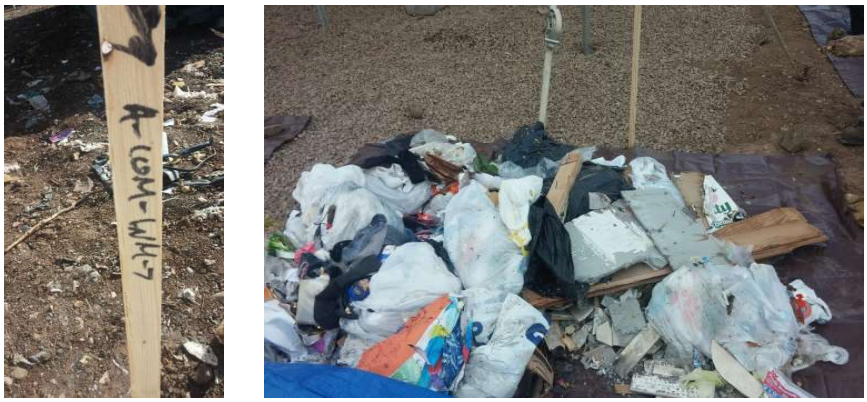
4 WASTE COMPOSITION

To better understand diversion opportunities, an audit of MSW trash and single-stream recyclables was conducted in 2015 to identify what MSW materials were being disposed of and the quality of recyclables. The waste audits are waste composition analyses modified to accommodate a two season audit that reflects the population variability and data needs of the Valley. Audits were conducted during the following two seasons:

- Peak summer season, when tourism, second homeowner occupancy, and vacation rental was high – week of July 6th (summer audit); and
- Off-peak season, when tourism would be considered low – week of October 5th (fall audit).

The audits were conducted at the PCSWC and the Rio Grande drop site and were completed by Pitkin County staff, temporary workers, volunteers from the City of Aspen, and the WCG/LBA team. Figure 2 depicts the sorting area and weigh station, respectively.

Figure 2: PCSWC Waste Sorting Area and Weigh Station



4.1 Trash Audit

The trash audit was designed to identify future diversion opportunities. Samples were taken from loads hauled by public and private haulers operating in the Valley, and were sorted at the PCSWC landfill. While these loads were collected mostly within Pitkin County, some included waste from both Eagle County (primarily Basalt waste) and Garfield County (primarily Carbondale waste). A total of 8.5 tons of MSW was sorted

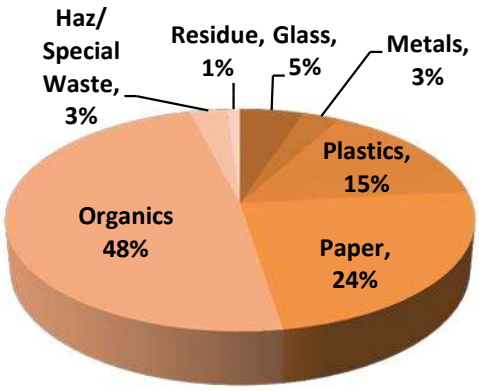
into 34 individual glass, metal, plastics, paper, organics, hazardous/special waste, and residue material types[9]. Appendix C contains the makeup of the individual categories.

4.1.1 2009 vs. 2015 Results

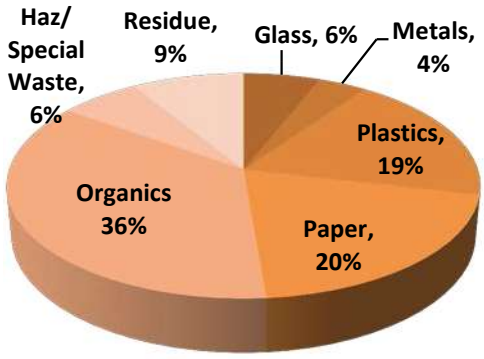
An earlier waste audit was conducted at the PCSWC in 2009[10]. A comparison to the more current data provides some background and context for this work. Figure 3 compares waste composition data from waste audits for the two time periods. While the audit methodology and materials sorted were very similar in both audits, new waste diversion incentives, mandates, and programs have been implemented since 2009[11] that have impacted trash composition. These improvements include the following:

- Shift from source-separated and dual-stream recycling to mostly single-stream collection (2014);
- New recycling collection and yard waste disposal ban policies in Aspen (2013); and
- New/expanded organics recovery programs (PCSWC facility and City of Aspen/Pitkin County restaurant and residential compost program (SCRAPS) (re-introduced in 2015).

Figure 3: Comparison of 2009 and 2015 Trash Composition



2009 Pitkin County Trash Composition



2015 Pitkin County Trash Composition

The most obvious difference between 2009 and 2015 is the decrease in relative organics content. The paper content of the waste measured is also lower in 2015, while plastics

[9] Thirty-two trash samples (8,828 pounds) were sorted during the summer audit and 34 samples (8,117 pounds) were sorted during the fall audit. This total represents about 2% of the average weekly trash tipped at the PCSWC.

[10] "Waste Composition Study for the Pitkin County, West Garfield County, South Canyon, and Eagle County Landfills", prepared by LBA Associates, Inc., 2009.

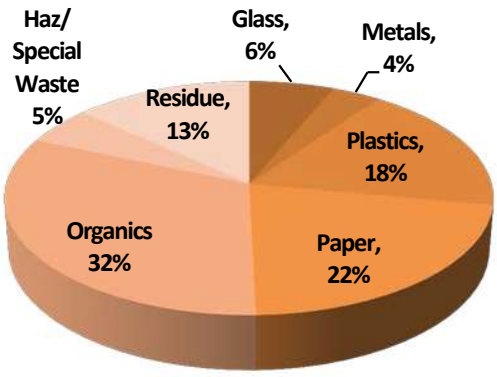
[11] Other changes include a state-wide electronic waste ban and expanded household/small business hazardous waste and electronic waste collections.

demonstrated an increase in 2015, and likely reflects changes to online reading and new packaging trends in recent years.

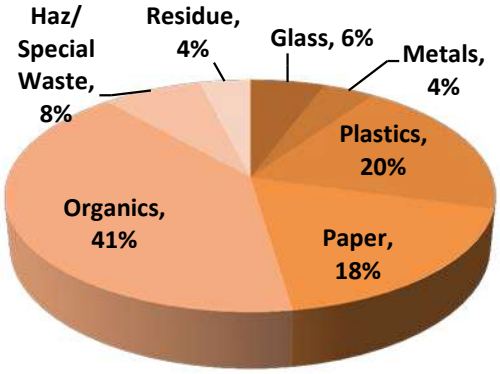
4.1.2 2015 Summer vs. Fall Composition

Figures 4 and 5 compare seasonal results by material category and material type, respectively. These figures provide a comparison of the impacts of seasonal tourism and seasonal residents in the Valley.

Figure 4: Summer and Fall Trash Composition by Material Category

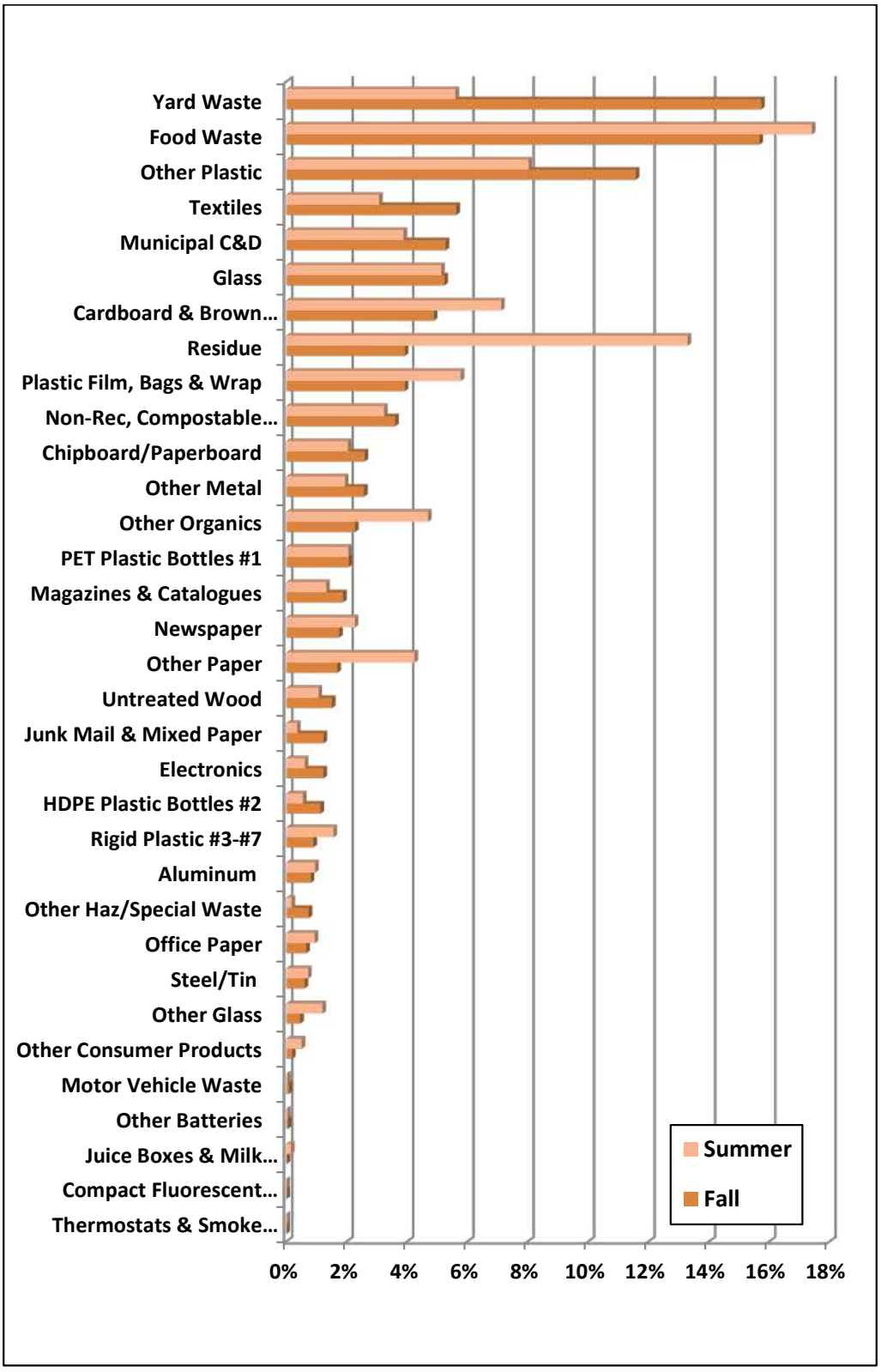


Summer 2015 Trash Audit Results



Fall 2015 Trash Audit Results

Figure 5: Summer and Fall Trash Composition by Material Type (percent by weight)



Key observations on the relative content of audited materials are included below.[12]

- Organics represent the largest trash fraction in both seasons:
  - Incoming yard waste appeared to be consistent with fall clean-up season;
  - Given the high quantity of yard waste and the predominance of Aspen trash managed at the PCSWC, it appears that the City of Aspen yard waste disposal ban is not effective;
  - Food waste appears to increase with high tourism levels in the summer, especially when residue (which included a high amount of unsortable organics - especially in the summer) is considered; and
  - Textiles were higher in the fall audit and may correspond to donations made when tourists and second homeowners leave the Valley.
- Plastic content was relatively consistent between audits. Plastic bags were high in the summer (despite grocery bag use bans in Aspen and Carbondale), while other plastics (plant pots, take-out containers, packaging and construction materials) were elevated in the fall season.
- Municipal C&D (a component of the Hazardous/Special Waste category) was higher in the fall audit, and was possibly the result of a mix of do-it-yourself home/office projects and the use of residential trash containers by contractors.
- Glass was consistent in both audits.
- Paper content was slightly higher in the fall audit. As the largest material in this category, cardboard was higher in the summer audit. This appears to correspond to tourism.
- Residue content was significantly higher in the summer audit and is likely tied to high food waste content. (Residue was defined as sand, soil, dirt, materials not classified elsewhere, or materials too small or too wet to sort).

By weight, 53% of all materials audited in the summer and 62% in the fall could have been managed as recyclables and recovered organics in existing diversion programs. When averaged over both seasons and compared to Pitkin County's 2015 MSW trash tons, these values indicate that roughly 13,000 tons per year (TPY) of recyclables and organics - or more than one-half of the 2015 MSW landfilled materials - could have been diverted. This estimate assumes a 100% diversion rate and assumes a program that is 100% efficient. This is statistically unlikely even in the most effective programs.

It appears that the tourist-based economy had an impact on the summer and fall audits. Materials like food waste (including that in the residue fraction); other plastic (e.g., waxy

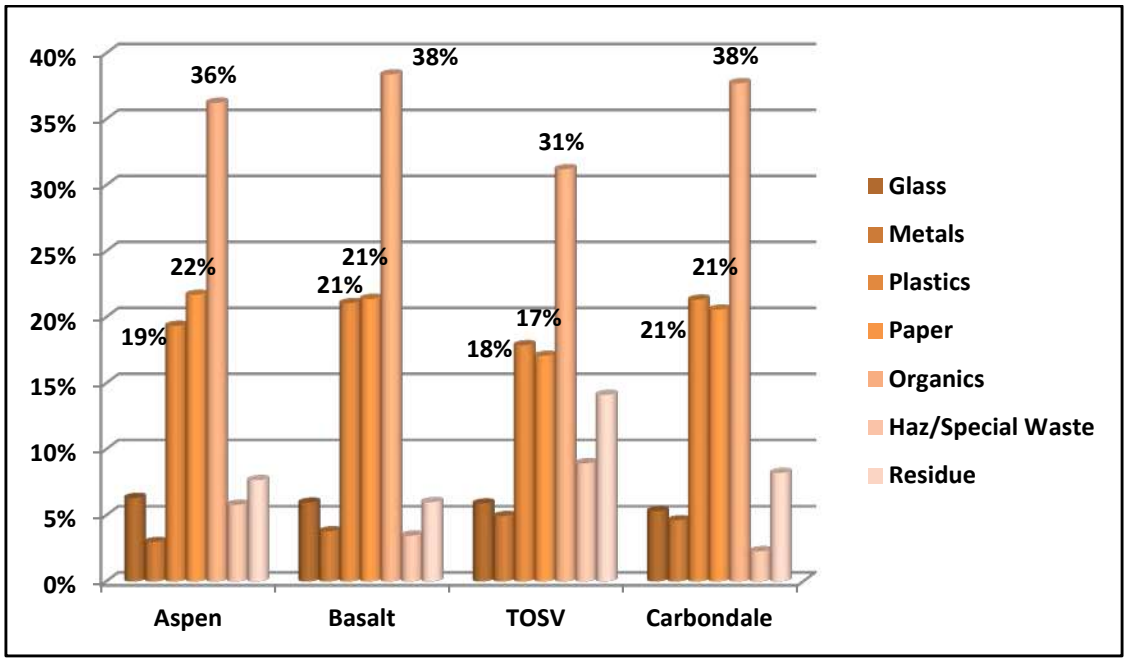
[12] Observations were, in part, based on a comparison to other rural Colorado audits conducted between 2004 and 2014 by LBA.

coffee cups, waxy cardboard and foil-lined paper); cardboard; plastic film; and other organics (e.g., diapers, animal waste, and carpeting) reflected an increase in the summer consistent with increased activity in the Valley. Other materials such as yard waste, other plastics, municipal C&D, and electronics (currently banned statewide in all landfills) were higher in the fall and appear to represent the impact of a population that uses the Valley as their primary residence.

4.1.3 Municipal Results

Given the variability in waste generation across Pitkin County, an evaluation of trash in each municipality was conducted based on loads delivered to the PCSWC. Figure 6 provides a comparison of the waste category composition for Aspen, Basalt, Snowmass Village, and Carbondale.

Figure 6: Aggregated Trash Composition in Municipal Samples



There were a few observable differences in the waste samples from each municipality, including the following:

- Plastics - Carbondale samples had lower plastic film than the others (even Aspen, which also has a bag use ban).
- Paper - Snowmass Village samples had notably less cardboard than the other municipalities, which could be a result of the comprehensive mix of public and private collections.
- Organics - Aspen samples had the greatest food waste content (consistent with the high number of restaurants in the city). Aspen samples also had the same

amount of yard waste as Snowmass Village and Carbondale, despite having a yard waste disposal ban, while Basalt had twice as much yard waste as the other municipalities. Also of note, Basalt samples had lower textiles (3%), which may reflect the Thrift Store's success in El Jebel.

- Hazardous/Special Waste - Snowmass Village samples had twice as much municipal C&D (these materials are typically generated from do-it-yourself home and office projects).

Overall, there were not huge variances in the municipal waste categories beyond the high food waste in Aspen and the lower textile, cardboard, and film quantities in other municipalities, probably due to isolated recycling efforts in these specific locations.

4.2 Recyclables Audit

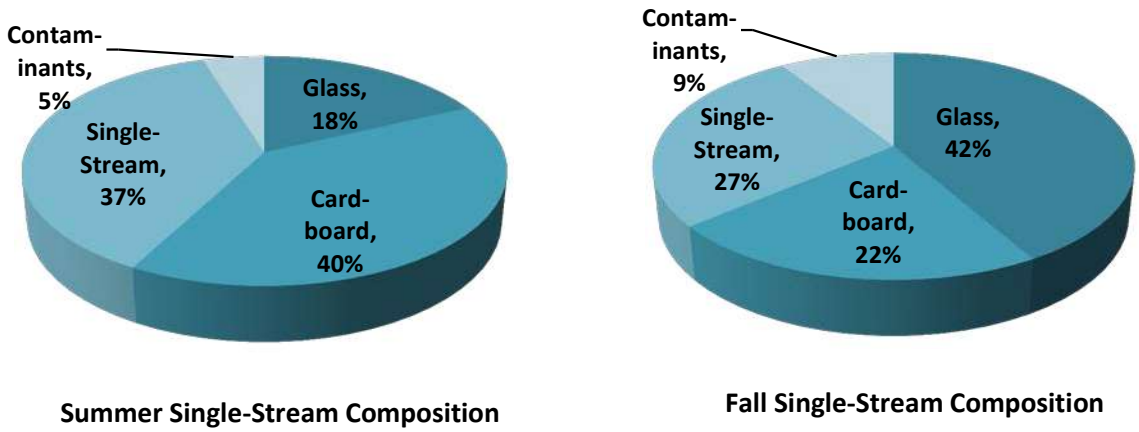
The recyclables audit was designed to measure the distribution of single-stream materials and to identify opportunities for more efficient recycling. Recyclable samples were collected from the PCSWC storage area (which contains materials tipped by Snowmass Village and some public drop site recyclables), as well as directly from dumpsters and recyclers unloading at the Rio Grande Drop Site. The audit focused on glass and cardboard content, the remainder of single-stream materials, and contaminants.

4.2.1 Summer vs. Fall Results

A total of 2,546 pounds of recyclables were categorized into the four material types during the two-season audit in 2015[13]. When all audit samples were analyzed, the average single-stream composition included 33% glass, 31% commingled material, 28% cardboard, and 8% contaminants. Approximately 916 lbs were categorized in the summer audit and 1,600 lbs were sorted in the fall audit. The aggregated single-stream recyclable results for each audit season are shown in Figure 7.

[13] This total represents about 8% of the average daily recyclables generation in Pitkin County.

Figure 7: Single-Stream Composition



Summer Single-Stream Composition

Fall Single-Stream Composition

This figure illustrates significant differences between the audits. Most notably, the glass content increased dramatically in the fall, while the relative content of both cardboard and the remaining single-stream declined. Reasons for this variation may include the following:

- Less glass content in the summer audit seems counter to the expected tourism impact during summer. This could indicate, however, that restaurants and bars are willing to divert this material, but are not as successful during peak business seasons when space and resources are limited.
- Recycled cardboard was higher in the summer. This is consistent with the summer trash audit, which also had high cardboard levels and likely corresponds to increased activity in the Valley.
- The recycled commingled (or single-stream) fraction appeared to be higher in the summer as compared to the fall, but this is most likely the result of low glass levels in the summer audit that changed relative composition.
- Contaminants in the recyclable streams were higher in the fall and appeared to be largely attributable to yard waste at the Rio Grande site, despite the presence a yard waste-only roll-off (leaves and grass are banned from disposal in the City of Aspen). The relatively low contamination levels in these single-stream samples indicated generally effective recycling practices at the drop sites.

4.3 Recommendations for Future Programs and Policy

While waste audits do not provide an exact replica of materials composition beyond the seasons in which they were conducted, these results are helpful in indicating the opportunity for additional diversion. These opportunities were developed into specific waste diversion improvement options in Section 5 of this report.

5 POTENTIAL WASTE MANAGEMENT IMPROVEMENTS

5.1 Future Diversion Improvements

Input from the public process (Section 2), research into the existing waste system (Section 3), and observations from the waste audit (Section 4) were all used to develop future waste diversion improvements. Options were identified that represent the greatest potential of meeting the Plan objectives of maximizing MSW and non-MSW waste diversion in the Valley with a strategy that involves appropriate incentives, regulatory enforcement, and public involvement. It is intended that those options with the greatest potential will be evaluated in detail in Phase II of the Plan.

5.1.1 Universe of Potential Options

Initially, a lengthy list of program, policy, and infrastructure options was developed to capture as many reasonable opportunities for addressing gaps and barriers in the existing waste system as possible. Figure 8 includes the major types of options identified.

Figure 8: Types of Potential Waste Diversion System Options[14]

Nearly 80 options were developed in the initial universal list (Appendix E includes a full tabulation). These options are expected to vary in applicability, operations, resource requirements, and effectiveness.

[14] Photo credits - www.ccaresearch.org, www.wasteminz.org.nz, www.thecompliancecenter.org, wastefreeroarkingfork.org, Rio Grande drop site, www. zmiscience.com.

Consideration of any option in Phase I or II of the Plan does not constitute a recommendation for implementation or approval at this time; rather, further evaluation is recommended to determine the feasibility and impact on the Valley's future waste diversion system. Only those options found to have substantial potential for effectively meeting the Plan objectives will ultimately be recommended for implementation.

5.1.2 Prioritized List of Waste Diversion Options

To focus Phase II efforts, government staff and environmental board advisory members from Pitkin County, City of Aspen, Town of Snowmass Village, Town of Basalt, and Town of Carbondale collaborated to prioritize several options from the universal list (Appendix E). This prioritization was based on knowledge of the Valley's solid waste system and an expectation of feasible implementation based on factors, such as social and political acceptance, enforceability, and timeliness. These options were subsequently separated into two groups as noted below.

Tier #1 options were considered by municipal leaders to have the greatest likelihood for directly increasing diversion or establishing a strong foundation for future diversion efforts. Due to this potential, Tier #1 options will likely be evaluated in detail in Phase II in terms of several metrics (e.g., estimated tons diverted, greenhouse gases reduced, jobs created, costs, and/or cost savings), as well as less measurable impacts such as enforceability, regional breadth, and ability for public-private partnerships). The Tier #1 options below will include a mix of incentives and regulation, and will be supported by appropriate enforcement (unless otherwise noted, these options are expected to be evaluated in the Valley):

- C&D evaluation and diversion;
- Commercial and special event recycling and organics recovery with dedicated food waste collection in urban areas;
- Yard waste disposal ban;
- Single-stream recyclable drop sites in Basalt, Snowmass Village, and Carbondale;
- Hauler curbside collection policy that encourages recycling, minimizes waste truck collection days in neighborhoods, and requires reporting of tons managed;
- Cardboard disposal ban with backhaul of cardboard in vehicles that typically only import materials into the Valley;
- Source-separation of glass from drop-off and/or curbside collections; and
- Collection at commercial business locations where single-use materials are provided to customers.

Tier #2 options were considered to also have potential for increasing diversion in the Valley, but their potential would likely be less direct. In Phase II, it is expected that the

Tier #2 options will be evaluated for diversion and greenhouse gas impacts. They include the following:

- Expanded used building material outlets;
- Local end-markets for wood mulch/compost product (local governments) and for glass (industry and contractors);
- Consistent single-stream recyclables collection (versus dual- or multi-stream) and a regional single-stream MRF (with service beyond the Valley);
- A purchasing cooperative for businesses and special events;
- Recyclable or compostable take-out packaging;
- Room for recycling and organics collection/storage in new multi-family and commercial construction and major renovations;
- Local electronic waste dismantling and refurbishing;
- Far-reaching, on-going education and outreach program;
- Grant program to encourage new programs and infrastructure;
- Regional intergovernmental agency function(s) for implementation; and
- Funding options to generate on-going implementation resources.

During the Phase II evaluation, the following general guidelines will be used to evaluate Tier #1 and #2 options, as appropriate, to ensure that Plan objectives are met in an even-handed and practical manner that involves all waste diversion generators and stakeholders in the Valley:

- Consistent messaging, programs, and services throughout the region;
- Use of existing partners, programs, policies, and infrastructure, to the extent possible;
- Comprehensive programs for multiple generator groups within the residential, tourist, and commercial sectors;
- Fair application to achieve an even playing field for affected public and private stakeholders;
- Assessment of relative implementation steps and requirements;
- Examples of successful implementation in other communities;
- Development of a practical and sequential implementation plan with roles and responsibilities clearly delineated;
- Examples of successful implementation in other communities;
- Ability to track the progress and success of future improvements; and

- Contribution to a measureable 5- and 10-year waste diversion goal for the planning area.

Based on Phase II results, those Tier #1 and #2 options that appear feasible and effective will be included in a valley-wide implementation strategy. Options whose evaluation results do not indicate a likelihood of accomplishing these outcomes will not be recommended.

5.2 Next Steps

Phase II of the Plan will include a comparative analysis of Tier #1 and #2 waste diversion options as described above. Those options found to have substantial potential for meeting the Plan objectives will be recommended in a comprehensive implementation strategy for the 10-year planning period. Phase II is expected to be underway during the summer of 2016.

6 LIMITATIONS

This report is intended for the sole and exclusive use by the City of Aspen and Pitkin County, based on specific and limited objectives. Re-use of this document is not permitted without WCG's and LBA's written approval. We assume no responsibility or obligation for the unauthorized use of this report by other parties and for conclusions, opinions, or recommendations made by others based on the data presented in this report. Limitations to this document include, but are not limited to, the following:

1. Population impacts cannot be fully predicted as data on tourism numbers were not available nor was a population analysis conducted. Fluctuations caused by seasonal tourists can have a significant impact on waste generation, diversion, and disposal practices. Observations based on these values for the existing system and for future predictions should be used judiciously.

2. Data accurately and fully describing waste generation, source reduction, reuse/repurposing, recycling, composting, and disposal was not available. A reasonable survey of authoritative information sources was conducted and it is expected that the tonnage summary in Section 3 represents a majority of MSW quantities. It is unlikely that all tons have been accounted for, however. Missing data may alter per capita generation values and diversion calculations. It is further noted that the inability to track non-MSW tons as well as tons generated in the study area but managed elsewhere, further challenge the ability to fully quantify waste totals.

3. While reasonable efforts were made to conduct the summer and fall audits consistently, the use of different sorters, different weather conditions, and different hauler collection schedules may have introduced variables that are difficult to quantify. Consistency in the recyclable audits in particular was challenging, especially at the PCSWC drop site. As recyclables were arbitrarily pulled from a stockpile at this location, it was difficult to obtain representative samples, and in some instances, this resulted in samples pulled from glass-only or cardboard-only loads. Also, as this site is uncovered, wet materials may have elevated weights.

4. Stakeholder observations were used to assist in understanding the existing waste system, identifying barriers and opportunities for improvement, and developing waste diversion options for further consideration in the Valley. Multiple business, public, hauler, and non-profit meetings, site visits, and teleconferences were held to collect a wide breadth of opinions and input. However, it is expected that many stakeholders did not participate in these dialogues and their observations were not available to inform the process.

APPENDIX A

LIST OF PLAN STAKEHOLDERS

APPENDIX A
ROARING FORK VALLEY WASTE DIVERSION PLAN STAKEHOLDERS

NAME	ORGANIZATION	EMAIL	PHONE	
HAULERS				
Lance Benninghoff	Waste Management	lbenning@wm.com	970-778-5541 (cell) 970-263-5610 (office)	
Kevin Richards (Linda)	Waste Management	krichar1@wm.com	970-384-6216 (office)	62
Courtney Herring	Waste Management	cherring@wm.com	970-765-6930 (cell) 970-384-6230 (office)	62
Scott Eden	Mountain Waste & Recycling	scott.eden@mountainwaste.com	970-319-1830 (cell) 970-945-2822 (office)	Ca
Doug Goldsmith	Mountain Waste & Recycling	doug.goldsmith@mountainwaste.com	970-749-2802	
Debra & Robert Kennedy	Aspen Trash	no email	970-963-7098	Ca
Moe Owen	Moes Inc / Waste Inc	m@moeinc.com	970-925-2392	As
Dee	VIP Trash Services		970-945-9228	Gl
	Valley Garbage Solutions		970-963-3922	
Alyssa Reindel (Dave)	Evergreen Events	alyssa@evergreenevents.net	970-987-3140	52 81
Dorothea Farris	CVEPA/Heartland	dfarris@sopris.net	970-948-9470	
MUNICIPALITIES				
Liz O'Connell	City of Aspen	liz.oconnell@cityofaspen.com	970-429-1831	63
Bert Myrin	City of Aspen	bert@myrin.com	970-925-8645	
Janette Whitcomb	City of Aspen	jannette.whitcomb@cityofaspen.com	970-920-5069	
Rachel Burmeister	City of Aspen	rachel.burmeister@cityofaspen.com	970-920-5075	
Dave Ogren	Town of Snowmass	dogren@tosv.com	970-923-5110, x-4	PC
Ann Martens, PW Dir	Town of Snowmass	amartens@tosv.com	970-922-23210	PC
Jason White	Carbondale Env Adv Board	coldmountainstream@yahoo.com	970-927-4468	
Jay Harrington	Carbondale Town Manager	jharrington@carbondaleco.net		
Laurie Lindberg	Carbondale Asst PW Director	llindberg@carbondaleco.net	970-510-1325	La
Larry Balanger	Town of Carbondale			
Mark O'Meara	Town of Carbondale			
Natalie Fuller	Carbondale Env Adv Board	natalierae13@gamil.com	503-960-9428	
Rob Hollis	Carbondale Env Adv Board	rhollis@billposs.com	303-718-7067	
Susan Philp	Town of Basalt Plan. Dir	susan.philp@basalt.net	970-927-3551	

APPENDIX A
ROARING FORK VALLEY WASTE DIVERSION PLAN STAKEHOLDERS

NAME	ORGANIZATION	EMAIL	PHONE	
James Lindt	Town of Basalt Asst. Plan. Dir	james.lindt@basalt.net	970-279-4468 970-927-4701	
Amanda Poindexter	Town of Basalt Green Team	poindexter.amanda@gmail.com		
Charlie Eckart	Town of Basalt Green Team	charlie@aspencore.org		
Phillip Ring	Town of Basalt Green Team	phillip@rds-aspen.com		
Ben Roush	Town of Basalt Green Team	broush@designworkhop.com		
Jeff Hanle	Town of Basalt Green Team	jhanle@aspensnowmass.com		
Eric Vozick	Town of Basalt Green Team	ericvandjillg@comcast.net		
Gerry Terwilliger	Town of Basalt Green Team	gterwilliger@gmail.com		
ASPEN SKIING COMPANY				
Matt Hamilton	Aspen Skiing Corp	mhamilton@aspensnowmass.com	970-300-7153	
Auden Schendler	Aspen Skiing Corp	aschendler@aspensnowmass.com	970-300-7152	
Henrietta Oliver	Aspen Skiing Corp	holiver@aspensnowmass.com		
Henning Rahm	Aspen Skiing Corp	hrahm@limelighthotel.com		
Lee Solomon	Aspen Skiing Corp	lsolomon@aspensnowmass.com	970-923-1220	
RESTAURANTS/GROCERS/LIQUOR STORES/RETAILERS				
David Clark, Gen. Mgr.	Clark's	david@clarksmarket.com	970-925-8046	As
John Hailey	City Market - Aspen	john.hailey@stores.citymarket.com	970-925-2590, x-0	As
Trent Cook	City Market - Basalt	trent.cook@stores.citymarket.com	970-963-3360, x-0	Ba
Marty Martin	City Market - Carbondale	marty.martin@stores.citymarket.com	970-963-3255, x-0	Ca
Ralph Powell	King Soopers/City Markets	ralph.power@kingsoopers.com	720-859-0782	De
Courtney Lawler	Roxy Market	roxysmarket@yahoo.com courtneylawleratroxys@yahoo.com	970-920-7699	As
Aaron McCallister, Asst Mgr	Whole Foods	aaron.mccallister@wholefoods.com	970-927-1500 (office) 303-913-6538 (cell)	Ba
Loralei Mcpeek	Whole Foods	lorelei.mcpeek@wholefoods.com		Ba
Erik Klanderud	Chamber of Commerce Aspen	eklanderud@aspenchamber.org	970-920-7149,925-1940	As
Robin Waters	Chamber of Commerce Basalt	director@basaltchamber.com	970-927-4031	Ba
Rosa Bello	Chamber of Commerce Snowmass	rabello@snowmasstourism.com	970-923-2000, x-8	Sn
Mark McLoone	The Grog Shop	grogshop@sopris.net	970-925-3000	71
Mike, Owner (also gas station)	Local Spirits 'n Liqour Store	gotgas@sopris.net	970-925-7699	As
Jerry Plumley	0f Grape & Grain		970-925-8600	As

APPENDIX A
ROARING FORK VALLEY WASTE DIVERSION PLAN STAKEHOLDERS

NAME	ORGANIZATION	EMAIL	PHONE	
Steve Wickes	Sundance Liquor	swickes@rof.net	970-923-5890	PC
Chris Peterson	Carbondale Ace Hardward	chris@alpineace.biz	970-963-6663	
PROPERTY MANAGERS				
Patrick Hinch	Aspen/PC Housing Authority	pat.hinch@cityofaspen.com	970-429-5139	18
Paddy Allen	Frias Property Mgmt		970-429-2436	As
Peter/Chris	Aspen Property Mgmt	peter@aspenpropertymngt.com	970-920-3960	As
Tim Riggins	Alpine Valley Services	tim@alpinevalleyservices.com	970-948-7673	As
(Jack)	McCartney Property Management	res@mccartneyproperties.com	970-925-8717	As
	Moes Inc. (see above)			
Sabrina van Doorn	Aspen Alps	sabrina@aspenalps.com	970-925-7820	70
INSTITUTIONS				
	Aspen Valley Hospital			
	Aspen-Pitkin County Airport			
	Aspen School District			
Kelly Bejarano, Gr. Team	Colorado Mountain College	kbejarano@coloradomtn.edu	970-925-7740	As
NON-PROFITS				
Mona Newton	CORE	mona@enegysmartcolorado.com	970-925-9775, x-500	Ca
Lucy Kessler	CORE	lucy@aspencore.org	970-925-9775	
Jeff Sirbu	H2H for Roaring Fork Valley	habitat.jeffs@gmail.com	970-366-2669	Gl
Julia Farwell	Basalt Thrift Store/Car EB	juliafarwell1@gmail.com	970-927-6488 (work) 970-963-7435 (home)	als En
Gwen Garcia	Roaring Fork Food Alliance	gwen@roaringforkfood.org	970-963-9182	Ca
LANDFILLS				
King Lloyd	South Canyon Landfill			
	West Garfield County Landfill			
Jesse Matsen	Eagle County Landfill			
Aaron Byrne	Summit County Landfill			
Cameron Garcia	Mesa County Landfill			

APPENDIX B

STAKEHOLDER OBSERVATIONS

APPENDIX B
STAKEHOLDER OBSERVATIONS

STAKEHOLDER	OBSERVATIONS
Education Issues	Reuse, repurpose, diversion ethic is critical - need to practice what we preach
	Reusing and repurposing more important than recycling
	Critical target groups are tourists, youth & "middle" of permanent population that are not already recycling but may be encouraged to do more
	Short/long-term renters, vacationers, second home-owners and students all have different education and service needs
	High contamination/illegal dumping at shared containers - generators often mix of residential/commercial, lack "ownership", hard to target for education or enforcement
	Elevated contamination worse during tourist seasons
	Lack of feedback on curbside contamination (haulers don't consistently notify)
	Cultural/language barriers for some guests and tourists (e.g., music school students, Latino population in Carbondale)
	Education messages need to decrease confusion and encourage participation (need to capitalize on Waste-Free Roaring Fork branding/messaging)
	Lack of staff for education and outreach in Aspen and Pitkin County
	Lack of champions in every community to help prioritize waste diversion
	Lack of clarity around relative benefits of disposal locally versus hauling recyclables to Western Slope or Front Range (exacerbated by mixed messages from some haulers)
	Confusion about who can/cannot use the Rio Grande drop site
	Lack of awareness that Aspen generators are already paying for recycling (haulers not getting message out, results in over-use of Rio Grande drop site)
	Confusion about Pitkin County Solid Waste Center (PCSWC) versus South Canyon Landfill compost services
	Confusion about whether recyclables/organics are actually diverted or landfilled
	Consumers' need to demand less packaging and/or more recyclable packaging (both individuals and businesses)
	Confusion about why diversion is expensive, not understanding relative disposal costs
	Messaging must be done by professionals (govt staff don't have skills) - needs to be big campaign that provides consistent messaging, addresses tourists, is attractive & fun
	Develop regular media messages to engage/educate public and letters to elected officials to approve new programs, policies (also use utility bills for messaging)
	Needs incentives (especially for youth)
Commercial Generator Staffing Issues	Variety of recycling services - some lodging/restaurants find sorting recyclables out of trash can be more effective than educating guests (safety issues, however)
	Hotels/lodges/resorts/restaurants are not doing enough - these are the access points for tourists
	Restaurants need help specifying recycled/compostable products, buying in bulk,

STAKEHOLDER	OBSERVATIONS
	customer messaging, staff training - purchasing collaborative would help
	Green business recognition program would help
	Various grocery departments have different staffing outreach issues
	Divert food waste for food banks, needy, wildlife - organize delivery systems to move food past expiration but still safe
	Cultural and language barriers make any diversion difficult
	Homeowner associations may have housekeeping separate from property manager - no direct way to control diversion activities
	Homeowner associations need to do more recycling, composting
Collection Issues	Require all homes, businesses to subscribe to trash curbside collection
	Require all homes, businesses to subscribe to trash, recycling, organics collection with fines for not participating
	Need consistent recycling region-wide (i.e., materials accepted, commingling level)
	Mandate single-stream valley-wide as is easier for generators - but not all processors accept commingled materials, may be difficult for some haulers
	Single-stream does not maximize value of cardboard, allows glass contamination - business who want to source-separate materials don't have space for extra containers
	Dual-stream recycling at Aspen Public Housing Authority properties due to inability to change city contract
	Lack of recycling access for tourists (e.g., no recycling bins in many lodging rooms)
	Inconvenience, congestion and recent closures limit utility of Basalt drop-site
	Add more drop sites - Rio Grande should be kept open at any cost
	Drop sites need to have limited hours, be staffed and enforce material restrictions (user-friendly sites like Glenwood Springs with volunteer staff especially helpful)
	Drop site recyclables can be twice as contaminated as curbside recyclables
	County heavily subsidizes drop-site recycling (led to tonnage limits at PCSWC)
	High cost/increased environment impacts from multiple haulers serving same neighborhood or business district
	Collection not frequent enough to keep up with strong diversion activity (some small haulers do not have equipment/staff to meet needs)
	Limited space for more recycling and composting containers
	Composting expensive because of wildlife containers, more frequent collection, permitting enclosures (city permitting process is an obstacle), not available everywhere
	Confusion by some haulers about PCSWC's acceptance of all organics
	Complicated/expensive enclosure permitting in Aspen
	Some food waste not well containerized and harmful to wildlife
	Liquor stores prefer glass recycling to state bottle bill
	Lack of collaboration between adjacent businesses - commercial property

STAKEHOLDER	OBSERVATIONS
	owners/managers need to actively encourage and support diversion activities
	Lack of quantity data to track diversion levels
Operational Issues	Inconsistent pay structures in Aspen/Pitkin County ordinances increases use of Rio Grande drop site by county residents
	Lack of enforcement for Aspen and Pitkin County hauler ordinances (provision of recycling to all trash customers) - also increases Rio Grande drop site use
	Lack of enforcement for yard waste disposal ban in Aspen
	Lack of enforcement for wildlife containers
	Limited SCRAPS participation (started in 2015)
	Address compostable products in Pitkin County compost (limit in organics stream and/or obtain new processing equipment)
	Inconsistent plastic bag ban policy in region (none in Basalt, Snowmass Village - only applies to large grocers - exempts some grocery departments) - expand "bring your own bag" practices
	Expand policies for requiring new/renovated multi-family units (MFU), commercial properties to have adequate space for recycling, composting
	Lack of data (in- versus out-of-county waste flow, facilities used, etc.)
	Get toxic materials out of waste stream
	Use incentives and avoid punishing those who "do the right thing"
Suggestions for Future Diversion Strategy	Identify single improvement and form region around it (e.g., Roaring Fork Transit Authority (RFTA))
	Develop short- and long-term measurable waste diversion goals
	Promote waste diversion successes as way of encouraging participation
	Target large generators (commercial and multi-family) for greatest diversion
	Identify long-range cost of disposal once the county landfill closes
	Consider not accepting glass in single-stream (or at all) as it is not used locally and is expensive to ship/process OR identify new local markets
	Evaluate how to make a single-stream processing facility cost-effective in the region (western slope)
	Evaluate new construction products made from plastics, how to attract new manufacturing to valley
	Look at previously-considered waste-to-energy options
	Implement fines to pay for programming
	Implement a tourist-based fee to pay for programming

APPENDIX C

MSW AUDIT CATEGORIES AND DESCRIPTIONS

APPENDIX C
MSW AUDIT CATEGORIES & DESCRIPTION

MATERIALS	DESCRIPTION
GLASS	
Glass Food & Beverage Containers	All colors of food & beverage bottles & jars
All Other Glass[a]	Mirrors, window/auto glass, bulbs other than compact fluorescents, ceramic, porcelain, glass cookware - COMPACT FLUORESCENT BULBS in COMPACT FLUORESCENT BULBS
METAL	
Aluminum Food & Beverage Containers, Foil & Pie Tins	Aluminum, tin, steel & bi-metal beverage & food cans, empty aerosol cans, foil, food trays and pie tins
Steel/Tin Food & Beverage Cans	Tin, steel & bi-metal beverage & food cans - EMPTY METAL PAINT CANS IN OTHER METAL
All Other Metal[e]	Coat hangers, cook pots, non-food containers, all scrap metal & items that are primarily metal, container lids/caps, empty aerosol cans - AEROSOL CANS CONTAINING PRODUCT IS OTHER HAZARDOUS/SPECIAL WASTE
PLASTICS	
PET Plastic Bottles #1	Resin #1 bottles with necks/openings narrower than body, including beverage containers, cleaning product containers and others - LOOSE PLASTIC BOTTLE CAPS ARE OTHER PLASTICS
HDPE Plastic Bottles #2	Resin #2 natural/narrow neck (milk & water bottles), colored/narrow neck (detergent & shampoo bottles) - LOOSE PLASTIC BOTTLE CAPS ARE OTHER PLASTICS
Rigid Plastic Containers #3-#7	Resin #3-#7 plastic containers & tubs, including yogurt/dairy containers
Plastic Film, Bags & Wrap[e]	BUBBLE WRAP IS OTHER PLASTIC
All Other Plastic[a]	Film, styrofoam, other extruded polystyrene, other rigid packaging, including all foam food containers, foil-lined chip bags, foam products, loose bottled caps, un-numbered plastics
PAPER	
Cardboard & Brown Paper Bags	Corrugated cardboard, Kraft paper/bags
Newspaper	Inserts and glossies
Office Paper	"High" grade paper, including whole or shredded printer paper, typing paper, copy paper, computer paper, sticky notes (including plain & pastel colors) - PAPER WITH WAXY LINERS IS OTHER PAPER - BRIGHT COLORS ARE OTHER PAPER
Chipboard/Paperboard	Cereal, cracker boxes & other single-layer packaging - WAXY CARDBOARD IS OTHER PAPER
Junk Mail & Mixed Paper[b]	"Low" grade paper including junk mail, file folders(b), telephone books, paperback books
Magazines/Catalogues	Magazines

MATERIALS	DESCRIPTION
Juice Boxes & Milk Cartons	Waxy cartons packaging - FOIL LINED PAPER IS OTHER PAPER
Non-Recyclable, Compostable Paper[c]	Recyclable paper contaminated with food, moisture or other contaminant, including paper towels & napkins with food contamination, cardboard that is too wet to recycle - WAXY OR FOIL-LINED PAPER IS OTHER PAPER
All Other Paper[a]	Microwave trays, any foil-lined paper, waxy cardboard, carbon paper, neon/bright paper, photographs, waxy coffee cups
ORGANICS	
Food Waste[c]	All food/beverage waste (out of containers where active emptying not required), including bones & rinds - FOOD CONTAMINATED PAPER IS NON-RECYCLABLE COMPOSTABLE PAPER
Yard Waste[c]	Grass, leaves, weeds, pruning, stumps trees
Untreated Wood[c]	Unpainted or untreated wood, wood that is not heavily mixed with other materials (such as dimensional lumber, pallets, crates, etc.) - TREATED WOOD IS MUNICIPAL C&D
Textiles[d]	Clothing, shoes, rags, towels, rugs other than carpeting
All Other Organics	Carpet & padding, diapers, rubber products, upholstery, leather products, animal foods & waste, combustibles including wax, soap, cigarettes, briquettes, ash
HAZARDOUS/SPECIAL WASTES	
Electronics	Electronics with circuit boards (computer monitors, televisions, VCR or DVD players, portable music devices, cell/wireless phones, answering machines, digital cameras, electric razors, newer small household appliances) - TOASTERS, TOASTER OVENS, OLD/SMALL HOUSEHOLD APPLIANCES ARE OTHER METAL
Other Consumer Products	Furniture, mattresses & box springs, electronics or similar devices without circuit boards (such as headsets)
Batteries	All batteries except lead-acid vehicle batteries - LEAD-ACID VEHICLE BATTERIES ARE MOTOR VEHICLE WASTE
Compact Fluorescent Bulbs	Bulbs with folded/fitted tube and compact electronic ballasts in base - NON-FLUORESCENT BULBS ARE OTHER GLASS
Thermostats & Smoke Detectors	Thermostats, smoke detector units
Paint	Latex, oil paint - IF METAL PAINT CAN IS MOSTLY EMPTY IS OTHER METAL
Motor Vehicle Waste	Automobile/lead-acid batteries, used oil, used filters, tires
Municipal C&D	C&D debris, painted or treated wood, drywall, fiberglass, rock/concrete/brick, ceramics other than glassware), sawdust, scrap debris
Other Hazardous/Special Waste	Antifreeze, pesticides, herbicides, cleaners, adhesives, glues, explosives, asbestos, aerosol containers with product, medicines, cosmetics & other household chemicals, gasoline, kerosene, fuels, medical/biohazard waste, other hazardous materials or difficult to manage (requires special handling)
RESIDUE	

MATERIALS	DESCRIPTION
Residue	Sand, soil, dirt, inorganic materials not classified elsewhere, mixed MSW fines, recyclables, organics & other materials too small to sort

Notes:

[a] Materials not accepted in Pitkin County recycling programs or at Waste Management's Franklin St. MRF.

[b] Materials not accepted in Pitkin County recycling programs but accepted at Waste Management's Franklin St. MRF.

[c] Currently or potentially accepted for Pitkin County composting.

[d] Potentially divertible in future.

[e] Currently diverted outside of Pitkin County's traditional recycling programs.

APPENDIX D

WASTE AUDIT RESULTS – RAW MUNICIPAL DATA

APPENDIX D
2015 TRASH AUDIT
Summary of Raw Data

CATEGORY	MATERIAL	SUMMER AUDIT		FALL AUDIT		AGGREGATED SEASONAL	
		Weight (pounds)	% by Weight	Weight (pounds)	% by Weight	% by Weight Materials	% by Weight Category
GLASS	**Glass**	452.47	5.13%	425.38	5.24%	5.2%	6.02%
	Other Glass	105.57	1.20%	37.10	0.46%	0.8%	
METAL	**Aluminum**	83.87	0.95%	65.93	0.81%	0.9%	3.80%
	Steel/Tin	64.04	0.73%	49.20	0.61%	0.7%	
	Other Metal	171.48	1.94%	208.88	2.57%	2.2%	
PLASTICS	**PET Plastic Bottles #1**	181.20	2.05%	168.01	2.07%	2.1%	18.75%
	HDPE Plastic Bottles #2	48.58	0.55%	91.83	1.13%	0.8%	
	Rigid Plastic #3-#7	137.72	1.56%	72.71	0.90%	1.2%	
	Plastic Film, Bags & Wrap	509.88	5.78%	318.94	3.93%	4.9%	
	Other Plastic	708.92	8.03%	939.68	11.58%	9.7%	
PAPER	**Cardboard & Brown Paper Bags**	628.56	7.12%	397.00	4.89%	6.1%	20.09%
	Newspaper	200.00	2.27%	142.21	1.75%	2.0%	
	Office Paper	83.20	0.94%	53.49	0.66%	0.8%	
	Chipboard/Paperboard	180.11	2.04%	210.92	2.60%	2.3%	
	Junk Mail & Mixed Paper	31.78	0.36%	100.48	1.24%	0.8%	
	Magazines & Catalogues	117.07	1.33%	152.80	1.88%	1.6%	
	Juice Boxes & Milk Cartons	14.02	0.16%	1.39	0.02%	0.1%	
	Non-Recyclable, Compostable Paper	285.71	3.24%	292.82	3.61%	3.4%	
	Other Paper	374.83	4.25%	137.36	1.69%	3.0%	
ORGANICS	**Food Waste**	1536.94	17.41%	1272.49	15.68%	16.6%	36.16%
	Yard Waste	494.83	5.61%	1276.92	15.73%	10.5%	
	Untreated Wood	94.22	1.07%	122.80	1.51%	1.3%	
	Textiles	271.57	3.08%	457.17	5.63%	4.3%	
	Other Organics	414.68	4.70%	184.97	2.28%	3.5%	
HAZ/SPECIAL WASTE	**Electronics**	54.03	0.61%	99.77	1.23%	0.9%	6.38%
	Other Consumer Products	44.98	0.51%	15.94	0.20%	0.4%	
	Motor Vehicle Waste	2.35	0.03%	7.16	0.09%	0.1%	
	Other Batteries	2.81	0.03%	4.40	0.05%	0.0%	
	Compact Fluorescent Bulbs	0.00	0.00%	0.85	0.01%	0.0%	
	Thermostats & Smoke Detectors	0.78	0.01%	0.00	0.00%	0.0%	
	Municipal C&D	342.72	3.88%	428.79	5.28%	4.6%	
	Other Haz/Special Waste	15.79	0.18%	60.51	0.75%	0.5%	
RESIDUE	**Residue**	1173.44	13.29%	319.12	3.93%	8.8%	8.81%
	TOTAL	**8828.15**	**100.00%**	**8117.02**	**100.00%**	**100.00%**	**100.00%**

APPENDIX D
2015 TRASH AUDIT
Summary of Raw Data

CATEGORY	MATERIAL	MUNICIPAL SAMPLES (both summer & fall audit results)							
		ASPEN		BASALT		SNOWMASS VILLAGE		CARBONDALE	
		Pounds	% by Weight	Pounds	% by Weight	Pounds	% by Weight	Pounds	% by Weight
GLASS	Glass	454.61	5.43%	143.65	5.68%	155.28	5.66%	61.12	4.47%
	Other Glass	74.03	0.88%	6.93	0.27%	6.28	0.23%	11.56	0.85%
METAL	Aluminum	63.06	0.75%	21.38	0.85%	27.74	1.01%	26.36	1.93%
	Steel/Tin	59.98	0.72%	12.86	0.51%	22.80	0.83%	5.94	0.43%
	Other Metal	126.20	1.51%	61.45	2.43%	84.82	3.09%	30.79	2.25%
PLASTICS	PET Plastic Bottles #1	167.36	2.00%	55.02	2.18%	50.36	1.84%	47.24	3.46%
	HDPE Plastic Bottles #2	69.23	0.83%	26.81	1.06%	21.48	0.78%	11.06	0.81%
	Rigid Plastic #3-#7	115.80	1.38%	21.92	0.87%	20.77	0.76%	21.69	1.59%
	Plastic Film, Bags & Wrap	485.10	5.79%	156.95	6.21%	107.17	3.91%	43.80	3.21%
	Other Plastic	781.42	9.33%	271.77	10.75%	290.23	10.59%	167.49	12.26%
PAPER	Cardboard & Brown Paper Bags	548.41	6.55%	219.55	8.68%	115.37	4.21%	93.41	6.84%
	Newspaper	198.69	2.37%	39.88	1.58%	45.14	1.65%	15.46	1.13%
	Office Paper	80.35	0.96%	12.80	0.51%	12.83	0.47%	7.55	0.55%
	Chipboard/Paperboard	181.43	2.17%	53.41	2.11%	83.75	3.05%	35.91	2.63%
	Junk Mail & Mixed Paper	90.76	1.08%	20.01	0.79%	8.35	0.30%	11.04	0.81%
	Magazines & Catalogues	163.39	1.95%	27.96	1.11%	35.34	1.29%	10.59	0.78%
	Juice Boxes & Milk Cartons	8.21	0.10%	0.87	0.03%	2.22	0.08%	1.70	0.12%
	Non-Rec, Compostable Paper	315.91	3.77%	102.97	4.07%	63.44	2.31%	64.14	4.69%
	Other Paper	229.19	2.74%	63.35	2.51%	101.45	3.70%	41.16	3.01%
ORGANICS	Food Waste	1647.72	19.68%	344.30	13.62%	393.22	14.34%	211.20	15.46%
	Yard Waste	693.38	8.28%	401.75	15.89%	197.91	7.22%	120.81	8.84%
	Untreated Wood	88.20	1.05%	35.30	1.40%	71.37	2.60%	7.08	0.52%
	Textiles	369.86	4.42%	85.96	3.40%	138.94	5.07%	64.85	4.75%
	Other Organics	234.65	2.80%	103.19	4.08%	54.01	1.97%	111.39	8.15%
HAZ/SPECIAL WASTE	Electronics	86.82	1.04%	8.42	0.33%	15.42	0.56%	8.58	0.63%
	Other Consumer Products	20.71	0.25%	14.36	0.57%	0.00	0.00%	5.46	0.40%
	Motor Vehicle Waste	4.56	0.05%	3.10	0.12%	0.00	0.00%	1.20	0.09%
	Other Batteries	3.60	0.04%	1.44	0.06%	0.58	0.02%	0.54	0.04%
	Compact Fluorescent Bulbs	0.06	0.00%	0.70	0.03%	0.09	0.00%	0.00	0.00%
	Thermostats & Smoke Detectors	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.54	0.04%
	Municipal C&D	323.37	3.86%	51.71	2.04%	220.28	8.03%	10.58	0.77%
	Other Haz/Special Waste	45.72	0.55%	7.62	0.30%	8.45	0.31%	4.11	0.30%
RESIDUE	**Residue**	**640.33**	**7.65%**	**151.40**	**5.99%**	**386.78**	**14.11%**	112.02	8.20%
	TOTAL	**8372.11**	**100.00%**	**2528.79**	**100.00%**	**2741.87**	**100.00%**	**1366.37**	**100.00%**

APPENDIX D
2015 TRASH AUDIT
Summary of Raw Data

CATEGORY	SUMMER AUDIT						FALL AUDIT				
	PCSWC		RIO GRANDE		AGGREGATED		PCSWC		RIO GRANDE		
	Weight (pounds)	% by Weight	Weight (pounds)	% by Weight	Weight (pounds)	% by Weight	Weight (pounds)	% by Weight	Weight (pounds)	% by Weight	W (p
Glass	57.37	15.68%	101.16	19.70%	158.53	18.03%	390.00	49.97%	289.80	34.16%	
Cardboard & Kraft Bags	135.22	36.96%	214.5	41.77%	349.72	39.77%	133.00	17.04%	225.90	26.63%	
Other Single-Stream Recyclables	153.4	41.93%	175.54	34.18%	328.94	37.40%	216.60	27.75%	225.00	26.52%	
Contaminants	19.86	5.43%	22.36	4.35%	42.22	4.80%	40.80	5.23%	107.60	12.68%	
TOTAL	**365.85**	**100.00%**	**513.56**	**100.00%**	**879.41**	**100.00%**	**780.40**	**100.00%**	**848.30**	**100.00%**	1

APPENDIX E

UNIVERSE OF WASTE DIVERSION OPTIONS

APPENDIX E
UNIVERSE OF WASTE DIVERSION OPTION SHORT-LIST

	WASTE DIVERSION OPTIONS	EXPECTED COMPONENTS
DETAILED ANALYSIS (tons, ghgs, costs, jobs)		
D1	Require minimum construction/renovation/ deconstruction diversion	If minimum diversion not achieved require waste diversion plan, refundable d requirement, Int'l Green Construction Code
D2	Require food waste diversion for large commercial food establishments	Incl groceries, restaurants, cafeterias - seating/square footage threshold, enforcement, incl donation, composting
D3	Provide dedicated commercial food waste collection	Urban, clarify PCSWC v SCLF composting, assume mandatory commercial dive
D4	Expand yard waste disposal ban	Incl drop sites, enforcement
D5	Add drop-sites in Basalt, Carbondale, TOSV	Model one - paired with new hauler reqt, public
D6	Add drop-sites in Basalt, Carbondale, TOSV	Model one -not paired with new hauler reqt, public
D7	Expand hauler requirements	Incl licensing, PAYT, bundled T/R (T/R/O) , consolidated haul days, reporting, disposal prohibition, enforcement
D8	Implement cardboard disposal ban	Incl collection, baling, shipping - tie to backhaul
D9	Create backhaul for OCC (voluntary)	Use major vendors, incl OCC baling - support OCC ban
D10	Require source-separation of glass	Start with commercial/special events - add residential
D11	Establish minimum "green" practices or diversion for commercial generators, special events	Will vary by type - support with audits, tech assistance & procurement suppor phase in by size, include recognition/awards
D12	Require any commercial entity who provides single-use materials to provide collection (containers, film, paper)	At least as convenient as trash (in place of bag use ban expansion)
SUMMARY EVALUATION (may include tons, ghgs if applicable)		
S1	Expand used building materials facilities	Expand Habitat for Humanity north, new facility south - public
S2	Mandate single-stream (no dual or multi)	Minimum/uniform list of recyclables
S3	Develop purchasing cooperative for buying in bulk, recyclable/compostable products	Commercial entities, special events
S4	Require recyclable/compostable take-out packaging	Supported by purchasing coop (includes groceries)
S5	Expand commercial space reqts for recyc/organics	Apply to major renovations/new, enforcement
S6	Add local ewaste dismantling at PCSWC	Blue Star/VERN partnership
S7	Require govts to use of mulch, compost	For landscaping, erosion control, etc. - incl promotion
S8	Western slope single-stream MRF	New facility (consider Eagle option), public
S9	Develop local glass processing/market	Based on public/private partnership
S10	Develop multi-faceted, multi-audience, on-going outreach program	Incl brand growth; campaigns for tourists, property managers, non-English speakers, schools
S11	Develop grant program	For diversion projects by any party, criteria/evaluation approach
S12	Expand or form regional IGA	Build on VRM model
S13	Funding analysis (multiple components)	Incr hauler fees, non-compliance fees, landfill tip fees (new fee for unsorted tr

Phase I = 1-3 years
Phase II = 4-6 years
Phase III = 7-10 years