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Acronyms

C&D	Construction and Demolition
CSRA	Central Savannah River
CY	Cubic Yards
DCA	Department of Community Affairs
DNR	Department of Natural Resources
E&PI	Education and Public Involvement
EPA	Environmental Protection Agency
EPD	Environmental Protection Division
ESD	Environmental Services Department
E-waste	Electronics
FEMA	Federal Emergency Management Agency
FRC	Food Recovery Challenge
FWC	Food Waste Challenge
HDPE	high density polyethylene
HVAC	Heating Ventilation and Air Conditioning
KAB	Keep America Beautiful
KAUGB	Keep Augusta Beautiful
KCI	Kessler Consulting, Inc.
LEOP	Local Emergency Operations Plan
MRF	Material Recovery Facility
MSA	Metropolitan Statistical Area
MSW	Municipal Solid Waste
MSWL	Municipal Solid Waste Landfill
NA	Not Available
NAICS	North American Industry Classification System
OCC	Old Corrugated Cardboard
PET	Polyethylene Terephthalate
RDC	Regional Development Center
RDF	Refuse Derived Fuel
RPC	Recycling Program Coordinator
SL	Solid Waste Landfill
SWMP	Solid Waste Management Plan
U.S.	United States
WCS	Waste Composition Study
WTE	Waste-to-Energy



CHAPTER 1

INTRODUCTION

Chapter 1 INTRODUCTION

This Solid Waste Management Plan (SWMP) was developed by the City of Augusta's (Augusta's) Environmental Services Department (ESD), with input and support from other governmental departments, citizens, and consultants. It describes how solid waste and recovered materials will be managed for the period of 2020-2029. Local governments in Georgia are required to be part of an SWMP. This SWMP is an update to the Joint Solid Waste Management Plan 2008-2017 published in October of 2008 by Augusta, along with the cities of Hephzibah and Blythe.

There have been changes in Georgia state law regarding solid waste plans since Augusta adopted its last Joint Solid Waste Management Plan in 2008. In 2011, the Georgia Assembly passed Georgia Act No. 76, which eliminated the solid waste management planning review and approval process by Regional Commissions and Department of Community Affairs (DCA) and removed the requirement that counties and cities follow the planning standards or guidance previously established by the DCA. The amendment provides latitude in the development of a plan and encourages counties and cities to establish procedures and standards for updating SWMPs that meet their specific needs and encourages recycling for the benefit of the state-wide economy. While counties and other local governments are still required to prepare and adopt a SWMP, the minimum requirements now include three components:

1. demonstration of adequate solid waste collection capability and disposal capacity for 10 years;
2. identification of the type and size of solid waste handling facilities within their county; and
3. identification of geographic sites that are not suitable for solid waste handling facilities based upon environmental and land-use factors.

In addition, any new or updated plan requires a two-week public notice period.

This SWMP goes beyond these minimal requirements to provide a more robust assessment. This plan describes the solid waste stream size and composition, waste reduction and recycling programs, collection and disposal, public education efforts, and goals, and it outlines the land limitations within the planning area relative to the siting and expansion of solid waste handling facilities, as well as the process for determining if proposed facilities are consistent with this SWMP. It also presents programs and strategies, including an implementation schedule.

This SWMP is organized in seven sections, each addressing a critical component in the solid waste management planning process. These include:

- | | |
|-----------------------------------|---|
| 1. Waste Disposal Stream Analysis | 5. Land Limitations |
| 2. Waste Reduction | 6. Education and Public Outreach (E&PO) |
| 3. Waste Collection | 7. Goals and Strategies |
| 4. Disposal | |

The planning process began with an analysis of the waste disposal stream. This analysis was used as an input to the analysis of the next five components. Commonly defined as “core elements” of a Georgia SWMP, these components are:

- Waste Reduction
- Waste Collection
- Disposal
- Land Limitations
- Education and Public Outreach (E&PO)

Each of these elements was evaluated through a process that includes the following steps:

1. an inventory of programs and/or infrastructure;
2. an assessment under existing and projected conditions, contingency planning; and
3. the development of statement of needs, goals and strategies.

A working committee composed of members of the Augusta ESD, consultants, and officials from Augusta directed the planning effort. The study was initiated in February of 2018. A public workshop was held on June 19, 2019.

The contact person for the Joint Solid Waste Management Plan for Augusta and the cities of Blythe and Hephzibah is:

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Website: <http://www.augustasolidwaste.com>

1.1 SOLID WASTE PLANNING AREA

Augusta and the cities of Hephzibah and Blythe are located in east central Georgia. Augusta is approximately 150 miles west of the Atlantic Ocean and is bordered by the Savannah River to the northeast, Burke and Jefferson counties to the south, and Columbia County to the northwest. The center of Augusta lies roughly 121 miles southeast of Athens and 141 miles northwest of Savannah, Georgia. Augusta occupies a land area of 207,386 acres (324.04 square miles) plus 2,823 acres (4.41 square miles) of water area.

In terms of land area, Augusta ranks 90th of Georgia’s 159 counties. Augusta and surrounding counties and municipalities are members of the Central Savannah River Area (CSRA) Regional Development Center (RDC), which is a public sector, non-profit planning and development agency that serves a 13-county and 39-city region in the eastern portion of central Georgia. The home office for the CSRA RDC is in Augusta. Augusta is also part of a metropolitan statistical area (MSA) with Columbia, McDuffie, and Burke counties

in Georgia and Aiken and Edgefield counties in South Carolina. An MSA is a defined area used by federal agencies in collecting, tabulating, and publishing statistics. The metropolitan area contains a core urban area with a population of at least 50,000 and consists of one or more counties that have a high degree of social and economic integration with the urban core.

In 1996, Augusta consolidated with Richmond County to form Augusta, Georgia. The consolidated governing body consists of a Mayor and 10 Augusta Commissioners. Augusta is Georgia's second largest city. The cities of Hephzibah and Blythe and approximately half of the military installation base at Fort Gordon are also located within Augusta.

1.2 TOPOGRAPHIC SETTING

Augusta is in east central Georgia next to the Savannah River. It straddles the Fall Line, a geological boundary following the Appalachian mountain range from Alabama to New York. In Georgia and South Carolina, the Fall Line separates the Piedmont from the Coastal Plain. The Savannah River and its tributaries drain most of Augusta.

According to the United States (U.S.) Department of Agriculture, Augusta is situated in three major land resource areas: the Southern Piedmont, the Carolina and Georgia Sandhills, and the Southern Coastal Plain. The Southern Piedmont covers the extreme northern part of Augusta and consists of broad to narrow ridge-tops and long irregular hillsides bisected by numerous small, winding drainage-ways. The Carolina and Georgia Sandhills are in the northern and western parts of Augusta, and they separate the Southern Piedmont from the Southern Coastal Plain. The Southern Coastal Plain covers the southern and southeastern parts of Augusta and is characterized by broad ridge-tops and hillsides extending to drainage-ways. The nearly level floodplains of the Savannah River are in the eastern and northern parts of Augusta and on the narrower basins of its tributaries.

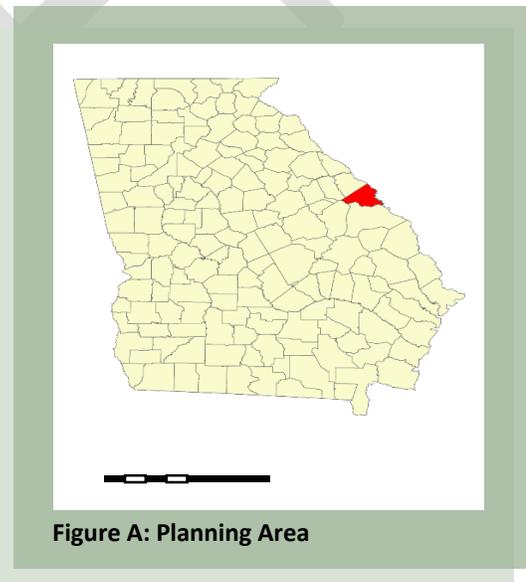
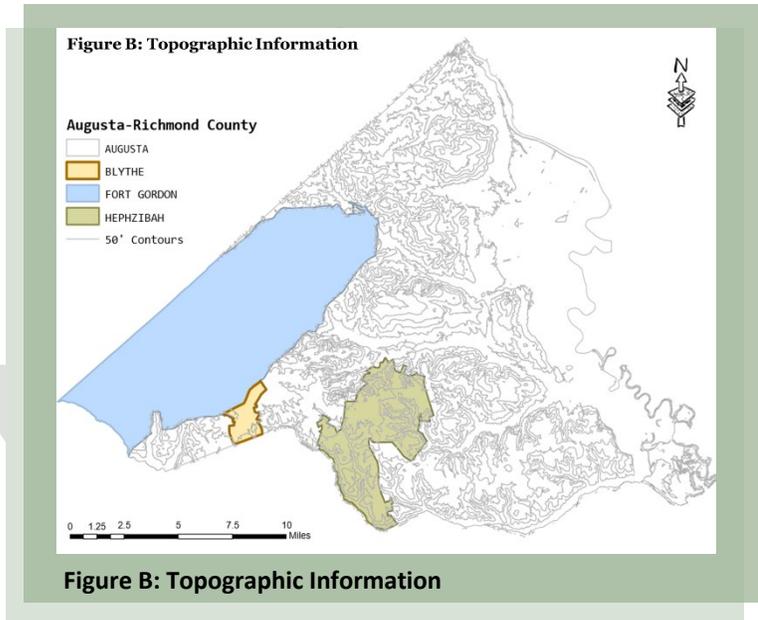


Figure A: Planning Area

Elevations range between 100-140 feet along the Savannah River and 500 feet or more on the high ridges on Fort Gordon. More than half of the total land area has a slope of less than 5%, and more than 85% of the land has less than 10% slope. Less than 2% of the land area has slope greater than 15%. The steepest slopes are found along Butler, Spirit, and Little Spirit Creeks. Most areas with steep slopes are located either within floodplains or on Fort Gordon, which are regulated by local ordinance.

Fort Gordon is about 56,000 acres, or 100 square miles, and is primarily contained in Augusta with small portions of Columbia, Jefferson, and McDuffie counties. Fort Gordon is the home of the U.S. Army’s Signal Center and School and Dwight D. Eisenhower Army Medical Center/Southeast Regional Medical Command, as well as a host of other command and agencies from across the joint forces (Army, Navy, Air Force, Marine, and multinational forces) of the U.S. While many of Fort Gordon’s activities center on support and “force readiness,” a great number of resources are also expended on communications and other training. Besides training the full-time military, Fort Gordon provides year-round instruction to reservists, in addition to active officer and non-commissioned officer students. Fort Gordon also hosts elements of other Army units and services such as ordnance, intelligence, communication labs, and band and headquarters units. The installation is home to the U.S. Army Signal Museum and actively supports the formal partnership between the U.S. Army and the National Science Center Fort Discovery. Fort Gordon and the Army Signal Museum are located in Augusta, Georgia.



1.3 LAND USE

Figure B depicts a topographical map of Augusta with a Landcover overlay.

1.4 POPULATION AND HOUSING CHARACTERISTICS

The estimated population of the planning area is 202,507 with a projection of continued, slow, and steady growth. The last U.S. Census in 2010 showed that Augusta had a population of 195,844. The projections made for Augusta are based on an analysis of the population trends over the past 10 years. Despite the 1.7% decline in population from 2000-2010, Augusta experienced a 0.7% increase from 2010-2017. An approximately 1.0% population growth is projected over the planning period. The population projections are shown in Table 1-1.

These projections are based on the assumption that the city limits of Augusta will not change. Georgia law prohibits municipal annexation within three miles of another municipality. Augusta shares a common border with both the cities of Hephzibah and Blythe. The projections also assume that the cities of Hephzibah and Blythe will continue to account for a relatively small percentage of Augusta’s total population.

Table 1-1: Population Projections

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Population Projections	201,616	202,061	202,507	202,953	203,401	203,850	204,300	204,751	205,202	205,655	206,109	206,563

Source: Augusta Economic Development, Development Authority of Richmond County

Some areas in the State of Georgia experience seasonal population variances due to increase in tourism, large annual events, and/or large student populations. These variances typically generate an additional amount of waste. The main source of seasonal population variance for Augusta is the annual Masters Golf Tournament during the first full week in April, which results in temporary influx of an estimated 200,000 visitors.

Based on the latest available U.S. Census data, there were 88,173 total housing units in the planning area. Table 1-2 summarizes reported census statistics surrounding housing units.

Table 1-2: Housing Occupancies

	Number
Housing Units	88,173
Occupied	72,470
% Occupied	82.2%
Owner Occupied	54.5%
Building Permits	598

Source: US Census 2016

1.5 EMPLOYMENT AND BUSINESS

The latest data from the Augusta Development Authority reported 8,048 entities employing 119,453 people in the planning area. Table 1-3 provides the number of businesses operating in each of the North American Industry Classification System (NAICS) code business sectors (including government).

Table 1-3: Survey of Firms by NAICS Code

NAICS #	Industry	Firms
11	Agriculture, Forestry, and Fishing	71
21	Mining	7
22	Utilities	16
23	Construction	806
31-33	Manufacturing	240
42	Wholesale Trade	328
44-45	Retail Trade	1271
48-49	Transportation and Warehousing	183
51	Information	82
52	Finance and Insurance	411
53	Real Estate/Rental and Leasing	320

NAICS #	Industry	Firms
54	Professional, Scientific/Tech Services	801
55	Management/Companies/Enterprises	34
56	Administrative and Waste Services	505
61	Educational Services	84
62	Health Care and Social Services	1084
71	Arts, Entertainment, and Recreation	110
72	Accommodations and Food Service	728
81	Other Services (Except Government)	649
92	Government	386
	TOTAL PRIVATE SECTOR	8048

Source: Georgia Department of Labor, Fourth Quarter 2016
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Table 1-4 shows the number of employees in each business within their respective NAICS business sector.

Table 1-4: Employment Sectors, Number of Employees

NAICS #	Industry Mix	Employment	% of Employment	Weekly Wage
11	Agriculture, Forestry, and Fishing	863	0.60%	909
21	Mining	108	0.10%	1277
22	Utilities	-	0.0%	-
23	Construction	6,397	4.20%	977
31-33	Manufacturing	12,649	8.30%	1109
42	Wholesale Trade	4,070	2.70%	1164
44-45	Retail Trade	18,851	12.30%	523
48-49	Transportation and Warehousing	2,727	1.80%	864
51	Information	2,004	1.30%	1100
52	Finance and Insurance	3,057	2.00%	1174
53	Real Estate/Rental and Leasing	1,418	0.90%	809
54	Professional, Scientific/Tech Services	9,309	6.10%	1609
55	Management/Companies/Enterprises	-	0.00%	-
56	Administrative and Waste Services	11,765	7.70%	526
61	Educational Services	1,386	0.90%	557
62	Health Care and Social Services	23,073	15.10%	1009
71	Arts, Entertainment, and Recreation	2,068	1.30%	482
72	Accommodations and Food Service	15,640	10.20%	309
81	Other Services (Except Government)	4,068	2.70%	588
92	Government	33,739	22.00%	947
	TOTAL PRIVATE SECTOR	119,453	78.00%	840

Source: Georgia Department of Labor, Fourth Quarter 2016
©2017 Augusta Economic Development Authority



CHAPTER 2

WASTE DISPOSAL STREAM ANALYSIS

Chapter 2 WASTE DISPOSAL STREAM ANALYSIS

Understanding the types and quantities of materials that are generated in the planning area is fundamental to strategy development, smart policy making, and investment in programs and infrastructure. The goal of a waste disposal stream analysis is to develop an understanding of the volume of waste generation, the sources of generations, and the composition of waste being disposed.

The goal of the Waste Disposal Stream Analysis section is to provide an inventory of waste generators by sector, evaluate the effect of influences on waste generation, and break down the composition of waste in Augusta’s waste facilities. Understanding the materials generated in Augusta is essential to guiding decision-making and planning for facility services and needs.

2.1 WASTE DISPOSED

Augusta maintains current records of all solid waste disposal within the county as it owns and operates the only permitted, municipal solid waste (MSW) landfill, which is located at 4330 Deans Bridge Road in Blythe. All ESD and Augusta contractors and collection services that have collection agreements with Augusta deliver solid waste to this landfill; however, private companies and waste collection companies direct some waste generated in the planning area to other waste management facilities outside of Augusta.

The landfill receives waste from both inside and outside of the planning area. Table 2-1 provides the annual amounts of waste disposed at the Augusta Landfill from 2013-2018. Between 2013-2018, the total volume received increased from 396,752 to 445,228 tons or at an annual growth rate of 1.9%. Between 2013-2017, the volume fluctuated but overall volume growth was flat. The spike in volume in 2014 was primarily due to a combination of a severe 10-year weather event: a winter ice storm and special industrial waste from a single source. The increase in volume in 2018 is primarily the result of a single unusually large soil remediation project which is not expected to recur. Net of this project volume total volume was flat between 2017 and 2018.

Table 2-1a: Waste Disposed at Augusta Landfill **

Year	2013	2014	2015	2016	2017	2018
Waste Disposed	396,752	471,041	368,819	398,672	404,103	445,228
Change		16%	-28%	7%	1%	10%

Source: Augusta ESD

**Includes waste disposed which was generated both in and out of Augusta.

Table 2-1b: Adjusted Waste Disposed at Augusta Landfill ***

Year	2013	2014	2015	2016	2017	2018
Waste Disposed	396,752	402,894	368,819	398,672	404,103	405,228
Change		1.5%	-8.1%	8.1%	1.4%	0.3%

Source: Augusta ESD

***Adjusted to normalize trend by removing effects of three event-based volume spikes 1) 2014 a) ice storm and b) spike in special waste and 2) 2018 large one-time soil remediation disposal volume

2.1.1 PER CAPITAL CAPITA DISPOSAL METRICS

According to the U.S. Census Bureau, Augusta had an estimated population of 201,800 in 2017 (last year available from Census). Modest population growth is expected to occur during the planning period. From 2010-2017, the planning area experienced a 0.6% increase in population, while neighboring Columbia County, which is also served by the landfill, experienced a 22.2% increase. Columbia County’s population growth is assumed to be a primary contributor to projected increases in both the total and per capita waste disposed. Table 2-2 displays the per capita disposal for 2017 and 2018.

For 2018, the per capita waste disposal rate for Augusta was estimated to be 2.20 tons, an increase over the 2017 figure of 2.00 tons per person. This jump primarily resulted from a nonrecurring soil remediation project, as such the 2017 figure is a more representative per capita disposal figure.

Table 2-2: Per Capita Waste Disposal

Year	Base Years	
	2018	2017
Population	202,061	201,800
Tons Disposed	445,228	404,103
Per Capita Tons Disposed	2.20	2.00

2.1.2 WASTE STREAM SOURCES

The Augusta landfill serves a multi-county area. Primary sources are Columbia County and Augusta. The landfill does not keep detailed scale house records as to the geographic source of all volume received, but it does maintain detailed records of who delivered the waste and in what quantity. Waste stream generators include residential dwellings; commercial businesses, industrial businesses, and vacant lots (yard waste); and construction and demolition (C&D) projects. Augusta’s ESD is evaluating capturing additional waste stream details through changes to software and processes. A waste composition study was conducted of waste received at the Landfill as part of the development of this plan. The results can be found in Section 2.6.

2.2 SEASONALITY AND EVENT IMPACTS ON WASTE GENERATION

Waste generation, using tons received as the primary indicator, in the planning area is not significantly affected by seasonality. In total and excluding the effect of very large one-time events, volumes received at the landfill are balanced across each quarter during the year based on scale records of volume received at Augusta’s landfill.

An analysis of 2017 and 2018 monthly volumes disposed at the landfill suggests no seasonal impact from the annual Masters Golf Tournament held at the Augusta National Golf Club in Augusta during the first full week in April. It was reported that Augusta effectively handles the increased amount of solid waste and recycling generated during this event through their contracted service providers, and by the efforts of local third-party collection companies.

2.3 EXTREME WEATHER AND DISASTER EVENT IMPACT ON WASTE GENERATION

Natural disasters are unpredictable and can pose short- and long-term difficulties to waste service providers. The severity of some disasters requires significant planning and awareness of how to handle the situation. Debris removal plays a large role in disaster recovery operations.

In the event of a disaster, Augusta would enact its Emergency Management Agency’s Local Emergency Operations Plan (LEOP). The LEOP may be found online at <https://www.augustaga.gov/DocumentCenter/View/8079>.

As described in Table 2-3, research on the actual rates of extreme events in the 60-year period of 1950-2010 suggests that there is a 90% chance that an extreme weather event will occur within a 10-year window in the planning area.

Table 2-3: 10 Year Probability of Extreme Event

Extreme Event	10-year Probability*
Tornado	76%
Ice Storm	14%
Hurricane	53%
Earthquake	0%
Combined	90%

*Based on rates of extreme events from 1950-2010

During the prior planning period, there were three extreme events: two hurricanes and an ice storm. While all three events generated additional waste, only the February 11, 2014 winter storm, which consisting of high winds, sleet, and ice, generated significant disposal volume relative to the total. The 2014 storm caused downed trees and hanging branches throughout the planning area. The Federal Emergency Management Agency (FEMA) estimated the total debris generated to be approximately

750,000 cubic yards (CY). Augusta scale house records identify approximately 46,200 storm related tons received at the landfill or 10-15% of the total). Augusta utilized its emergency contracting procedures to hire a debris removal contractor and monitoring firm to oversee the removal activities.

2.4 TEN-YEAR WASTE GENERATION PROJECTION

A 10-year projection of waste disposed at the Augusta landfill—developed utilizing economic, demographic, and waste diversion data—appears in Table 2-4. It includes assumptions of the origin of the waste disposed as coming from inside or outside of the county; these are estimates. Note that for 2018, there was a significant increase of in-county disposal compared to 2017 as a result of a large and non-recurring soil remediation project. The projections assume a normalized growth trend using 2017’s actual volume as a base. It is probable that there will be an additional unusual or nonrecurring waste generation event once or twice during the planning period, which could increase the amount disposed in a single year by 5-15%, as discussed in Section 2.3. This occurred in 2014 as a result of a severe winter storm. In total, this type of event-driven waste may represent three percent or less of the projected total volumes over the planning period.

Table 2-4: 10-Year Projected Tons Disposed

Jurisdiction	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
In-County	262,101	300,386	263,259	263,839	264,421	265,005	265,589	266,175	266,762	267,351	267,941	268,532
Out-of-County	142,002	144,842	147,739	150,694	153,708	156,782	159,917	163,116	166,378	169,706	173,100	176,562
Total	404,103	445,228 +	410,998	414,533	418,129	421,786	425,507	429,291	433,140	437,056	441,040	445,093

Source: 2017-2018 Totals are actuals, projections developed by the project team, the categorization of tons as “In-County” or “Out-of-County” are estimates. Note: + The increase in tonnage between 2017 and 2018 was impacted by the approximately 40,000 tons generated from a one-time soil remediation project in Augusta.

As shown in Table 2-5, per capita waste disposal was projected for the planning period. The projections utilized the volume projection data from Table 2-4 and assumptions using historic Augusta population growth rates with year 2017 as a base.

Table 2-5: Projected Per Capita Waste Disposal

	Base Year	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Population	201,800	202,061	202,507	202,953	203,401	203,850	204,300	204,751	205,202	205,655	206,109	206,563
Tons Disposed	404,103	405,228 +	410,998	414,533	418,129	421,786	425,507	429,291	433,140	437,056	441,040	445,093
Per Capita Tons Disposed	2.00	2.01	2.03	2.04	2.06	2.07	2.08	2.10	2.11	2.13	2.14	2.15

Source: Augusta and Census 2017 with growth assumption + 2018 tons exclude the 40,000 related to the soil remediation project.

Per capita disposal is defined as total tons projected to be disposed inside Augusta divided by the projected population of Augusta. The per capita increase over the planning period, will be driven primarily by the increased disposal of waste generated by residential, governmental, and businesses in Columbia County.

2.5 WASTE DIVERSION METRICS

There are multiple publicly and privately managed programs designed to divert waste from being landfilled. Data concerning these diversion volumes, including recycling collection and processing, is limited at the time of this report's development. Additional focus on the generation of comprehensive diversion data is a goal for the planning period.

Based on the number of recycling containers set out, the Augusta ESD estimates that 30% of households participate in Augusta's curbside recycling program out of the approximate 65,000 households in the planning area. Based on a container survey of Augusta's downtown area, the recycling participation rate is estimated to be less than 10%. The diversion impact of the curbside based on the large amount of nonrecyclable

2.6 WASTE STREAM COMPOSITION

Understanding the types and quantities of materials that are disposed is a critical part of developing goals and strategies surrounding potential material reuse and landfill diversion. A waste composition study (WCS) was conducted in May of 2018 and serves as a primary method of understanding the waste stream. The results serve as a benchmark for evaluating the effectiveness of future system changes. The WCS results are as follows.

2.6.1 WCS INTRODUCTION

A four-day WCS of the solid waste disposed of at the Augusta Landfill (Landfill) was conducted. The WCS consisted of the sampling and sorting of solid waste to determine the composition of solid waste currently disposed of from the residential and commercial generator sectors. In addition, visual audits were conducted on C&D debris and bulky waste collected within Augusta and disposed at the Landfill. The goal of this WCS was to provide Augusta with a clearer understanding of the types and quantities of waste disposed by its residents and businesses to identify opportunities for waste reduction in the updated Solid Waste Master Plan under development.

2.6.2 WCS Methodology

The four-day sorting events took place from May 14-17, 2018 at a designated area (sort site) at the Landfill. The methodology for this WCS followed a proscribed sampling and sorting protocol which was prepared in accordance to the *ASTM Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste* (D5231-92; reapproved 2008) and approved by Augusta.

A total of 32 samples were pulled and sorted over the course of the sorting event. The number of samples from each generator sector and hauler was determined by the relative estimated tonnage of solid waste delivered to the landfill, based on scale house data from March 2018 and follow up conversations with haulers. The tonnage estimated for the residential sector was based on the tonnage hauled by Augusta’s residential contractors (Advanced Disposal and Orion Waste Solution, Inc (Orion) formerly Orion Waste Solutions, LLC) as reported in the scale house records, subtracting out estimated tons hauled by the bulky and yard waste subcontractors, as reported by the subcontractors. The tonnage estimated for the commercial sector was based on tonnage hauled by Augusta’s major commercial solid waste haulers (Advanced, Orion, and Waste Management, Inc.). Table 2-6 shows the assumed tonnages and total samples from each sector and hauler. Table-2-7 shows the daily samples from each sector and hauler. A complete list of the 32 samples sorted are provided in Appendix 2 Sorted Samples.

Table 2-6: Waste Composition Study - Sampling Schedule

Hauler	Residential		Commercial		Total Samples
	Estimated Tons (March '18)	# of Samples	Estimated Tons (March '18)	# of Samples	
Advanced	1,693	6	6,770	15	21
Orion	2,086	6	628	2	8
Waste Management	-	-	1,167	3	3
Totals	3,779	12	8,565	20	32
Percent of Total Waste Stream	30.6%		69.4%		

Note: Tons are based on March 2018 scale house data. Tons exclude bulky waste (i.e. in roll offs or residential bulky/yard waste) and material collected outside of Augusta, as derived from scale house data and discussions with haulers.

Table 2-7: Daily Sampling Plan

Hauler	Mon (5/14)	Tue (5/15)	Wed (5/16)	Thu (5/17)	Total Samples
Advanced: Residential	2	2	1	1	6
Advanced: Commercial	4	4	3	4	15
Orion: Residential	2	2	1	1	6
Orion: Commercial	1	1			2
Waste Management	1	1	1		3
Totals	10	10	6	6	32

Once the desired number of samples from each generator sector and hauler was determined, each hauler was asked to select specific routes that represented a cross-section of their service areas within Augusta. KCI provided each of the three haulers with placards to provide to the drivers on the selected routes and

to identify the route and truck information. The placards also helped the Augusta scale house staff identify selected vehicles so that they could be diverted to the sort site.

2.6.3 WCS Sorting of Waste Sample

Following the procedures described in the sampling and sorting protocol, each selected vehicle tipped its entire load at a designated area of the sort site. An Augusta-provided loader, at the direction of the sampling supervisor, pulled a randomly selected sample of at least 200 pounds from the load. The sample was then transferred to the sample staging area prior to sorting. Each of the 32 samples was hand-sorted on the sorting table into 38 material categories, which are defined in Attachment A. After the entire sample was sorted, the sorted materials were weighed and recorded.



Following the completion of the sorting event, the percentage by weight of each material category was calculated for each of the two generator sectors by averaging the composition of each sample weighted by the sample weight. Where appropriate, 90% confidence intervals were calculated for each material category using a standard statistical t-test.¹ To determine the composition of the aggregate waste (i.e., combined residential and commercial waste) generated within Augusta and disposed of at the Landfill, the composition of residential and commercial waste was weighted by the estimated

tonnage generated by each sector, as shown in Table 2-7. Note: The tonnage does not include tonnage from other smaller haulers that collect commercial waste within Augusta because it could not be determined which haulers collect from Augusta and what tons are generated within Augusta. However, based on the scale house and annual tonnage data for 2016 and 2017, the three haulers included in the WCS collect the vast majority of non-industrial, non-C&D/bulky solid waste disposed of at the landfill.

To assess C&D debris/bulky waste, visual audits were conducted of eight randomly selected collection vehicles that reported their loads to be C&D debris or bulky material collected from Augusta. Note: The audit did not target residential bulky waste/yard waste collected under the residential contracts. The entire load was tipped at the sort site and was visually evaluated by the Sampling Supervisor to determine the approximate percent by volume of specific material types. Average volumetric composition and 90% confidence intervals were calculated for the C&D debris/bulky waste.

¹ The confidence interval indicates that, with a 90% level of confidence, the actual arithmetic mean is within the upper and lower limits shown. This provides an understanding of how much variation occurred in the quantity of that material category found in the samples sorted. Generally, the more homogeneous the waste stream and the greater the number of samples sorted, the higher the level of accuracy achieved and the narrower the margin between the upper and lower bounds of the confidence interval. Because this is a statistical analysis, the lower end of the confidence interval may be a negative number.

Volumetric composition was then converted to weight using industry-accepted conversion factors.

2.6.4 WCS RESULTS

Unless otherwise stated, all results presented in this section are expressed in percentage by weight.

Three pie charts, labeled Figures 2-1 to 2-3, are located on the following pages and present the composition of material from each generator sector:

Residential – (see Figure 2-1)

Commercial – (see Figure 2-2)

Aggregate – (see Figure 2-3)

Additional and more detailed results of the waste sort can be found in the tables and figures located in Appendix 2 - Waste Composition Study Data at the end of this report. This data includes:

- Residential – Table 2-8 and Figure 2-1; Individual sample results are provided in Attachment B. Residential Sample Results.
- Commercial – Table 2-9 and Figure 2-2; Individual sample results are provided in Attachment C. Commercial Sample Results.
- Aggregate – Table 2-10 and Figure 2-3. Table 2-11 compares the composition of aggregate waste to the 2004 composition of Augusta waste reported the 2008-2017 Solid Waste Management Plan.
- C&D debris/bulky waste (Visual Audits) – Table 2-12 and Figure 2-4. Individual sample results are provided in Attachment D. Visual Audit Results. Photos of each load are in Attachment E. Photos of Visual Audit Loads

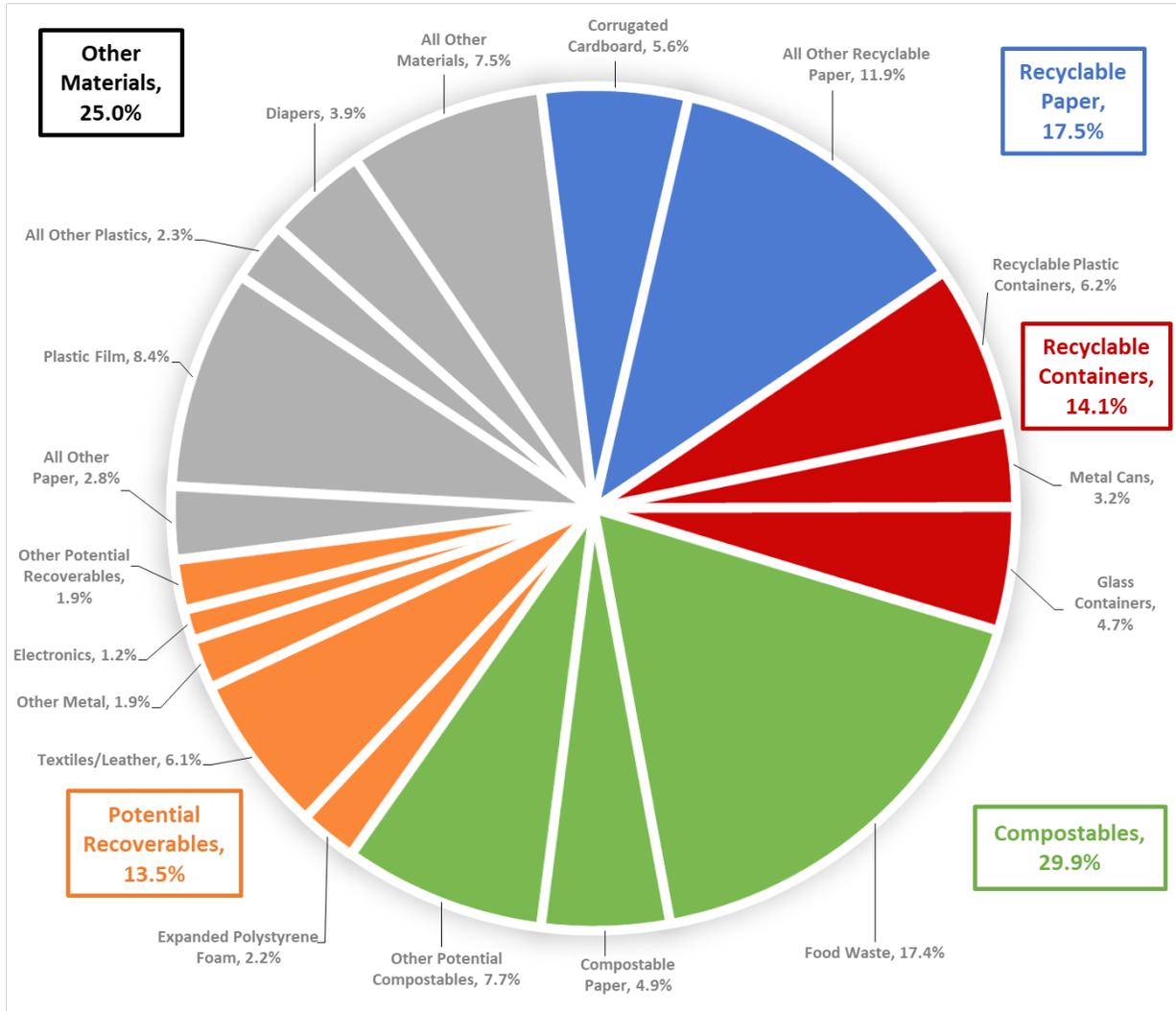
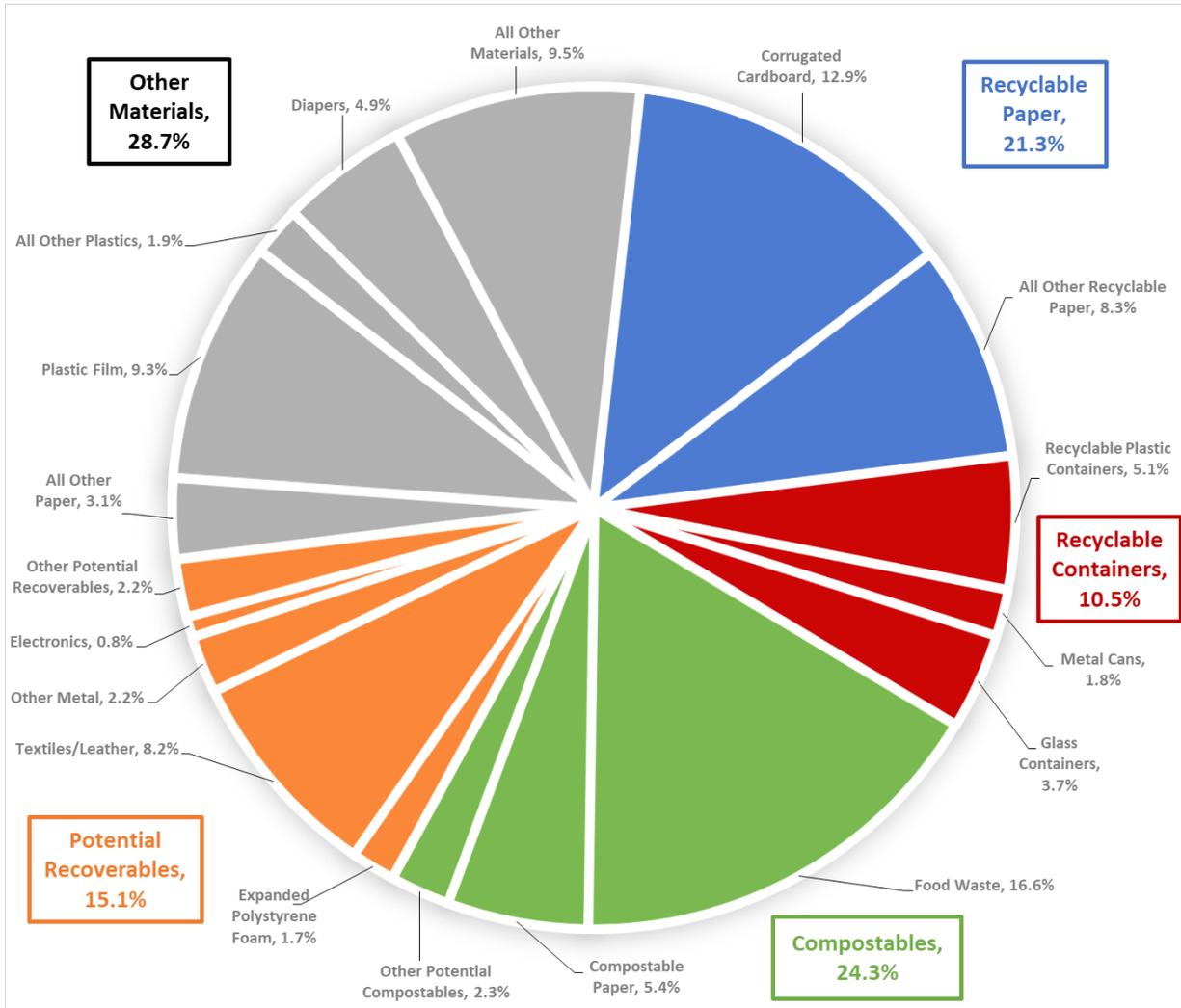


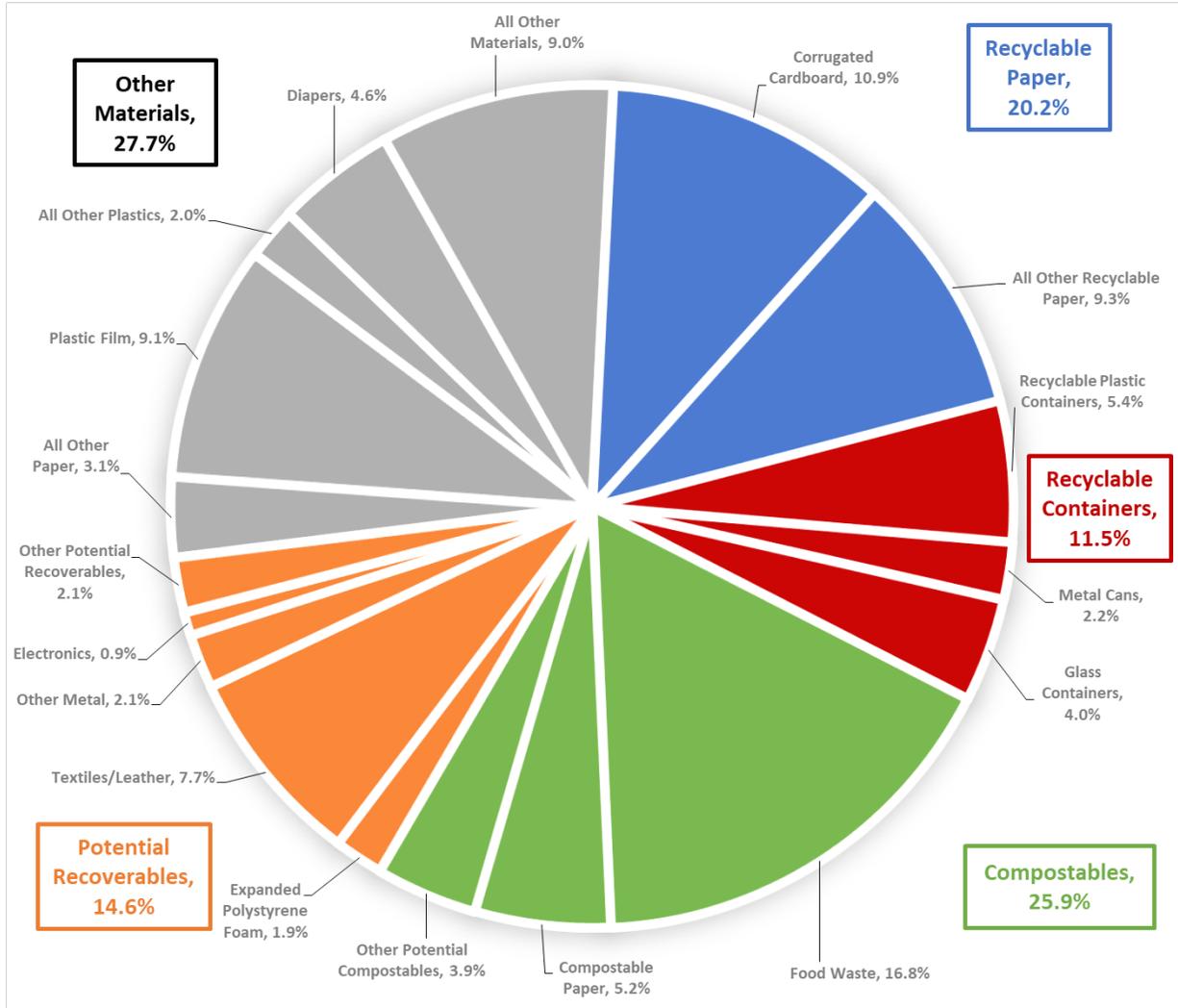
Figure 2-1: Composition of Residential Waste Disposed (% by Weight)



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

- “All other recyclable paper” refers to the categories of newspaper, office paper, and mixed recyclable paper.
- “Recyclable plastic containers” refers to the categories of PET bottles (#1), HDPE bottles (#2), non-bottle plastic containers #1 and #2, and other plastic containers #3-#7.
- “Metal cans” refers to the categories of aluminum and tin/steel cans.
- “Other metals” refers to the categories of ferrous and non-ferrous scrap metals and aluminum foil and trays.
- “Other potential recoverables” refers to the categories of aseptic/polycoated containers; bulky, rigid plastics; special wastes; C&D debris; and tires and rubber.
- “Other compostables” refers to the categories of compostable paper, clean wood waste, yard waste, and other organics.
- “All other materials” refers to the categories of white goods and small appliances, other glass, household batteries, treated wood waste, composite materials, liquids, and grit.

Figure 2-2: Composition of Commercial Waste Disposed (% by Weight)



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

- “All other recyclable paper” refers to the categories of newspaper, office paper, and mixed recyclable paper.
- “Recyclable plastic containers” refers to the categories of PET bottles (#1), HDPE bottles (#2), non-bottle plastic containers #1 and #2, and other plastic containers #3-#7.
- “Metal cans” refers to the categories of aluminum and tin/steel cans.
- “Other metals” refers to the categories of ferrous and non-ferrous scrap metals and aluminum foil and trays.
- “Other potential recoverables” refers to the categories of aseptic/polycoated containers; bulky, rigid plastics; special wastes; C&D debris; and tires and rubber.
- “Other compostables” refers to the categories of compostable paper, clean wood waste, yard waste, and other organics.
- “All other materials” refers to the categories of white goods and small appliances, other glass, household batteries, treated wood waste, composite materials, liquids, and grit.

Figure 2-3: Composition of Aggregate Waste Disposed (% by Weight)

For the purposes of discussion and analysis, materials were grouped into six broad material groups based on diversion potential:

- **Recyclable paper:** These are paper materials that are currently accepted in Augusta’s curbside single-stream recycling program and at Augusta’s drop-off locations, consisting of the following material categories:
 - Newspaper
 - Office paper
 - Corrugated cardboard
 - Mixed recyclable paper
- **Recyclable containers:** These are plastic and metal containers accepted in Augusta’s single-stream recycling program and at Augusta’s drop-off locations and glass containers accepted at Augusta’s drop-off locations, consisting of the following material categories:
 - Polyethylene terephthalate (PET) bottles (#1)
 - Other plastic containers #3-#7
 - High-density polyethylene (HDPE) bottles (#2)
 - Tin/steel cans
 - Non-bottle #1 and #2 plastics containers
 - Aluminum cans
 - Glass containers
- **Potentially compostable materials:** These are materials that could potentially be composted in a commercial composting facility if properly source-separated or separated from inorganic material in mixed waste processing, consisting of the following material categories:
 - Compostable paper
 - Other organics
 - Clean wood waste
 - Food waste
 - Yard waste
- **Potentially recoverable materials:** These are materials that have the potential to be recovered or recycled but are not currently collected for recycling in Augusta’s single-stream recycling program. Some of these materials, such as textiles/leather and C&D debris, would require source-separation and/or additional processing to recover. These materials consist of the following material categories:
 - Aseptic/polycoated containers
 - Textiles/leather
 - Bulky, rigid plastics
 - Special waste
 - Expanded polystyrene foam
 - Electronics (E-waste)
 - Ferrous scrap metal
 - C&D debris
 - Aluminum foil and trays
 - Tires and rubber
 - Non-ferrous scrap metal
- **Other materials:** These are any materials not classified above and not feasible to recover with traditional programs or technology, consisting of the following material categories:

- All other paper
- Plastic film
- All other plastics
- White goods and small appliances
- Other glass
- Household batteries
- Treated wood waste
- Diapers
- Composite materials
- Liquids
- Grit

2.6.5 WCS FINDINGS

Below is a summary of the key findings on the composition of solid waste from each generator sector and aggregate waste:

Residential

- Recyclable paper and containers comprised nearly 32% of the residential waste. Mixed recyclable paper was the largest category at 9.3%, followed by corrugated cardboard at 5.6%. It should be noted that heavy rains during the field work caused some of the paper and cardboard to become wet; this may have increased the overall percentage by weight of these materials. The third largest category was glass containers (4.7%), which are currently only accepted for recycling at Augusta's drop-off facilities.
- Nearly a third of the residential waste was potentially compostable. Food waste was over half of the compostable material, while the remainder was primarily compostable paper (mostly paper towels and napkins), yard waste, other organics (mostly cat litter).
- Approximately 13% of the residential waste consisted of other potentially recoverable materials. Nearly half of this was textiles/leather. At 2.2%, expanded polystyrene foam was also a significant material in this group.
- Other materials comprised about 25% of the residential waste. The three most prominent materials were plastic film (mostly garbage bags), composite materials, and diapers.

Commercial

- Commercial waste was approximately 32% recyclable paper and containers, about two-thirds of which was recyclable paper. Commercial waste had a much higher percentage of corrugated cardboard (12.9 percent) than residential waste but lower percentages of mixed recyclable paper and of PET bottles.
- Potentially compostable material comprised about 24% of the commercial waste. The composition of compostable materials was similar to residential waste, with food waste comprising over half of this group of materials.

- About 15% of the commercial waste was comprised of other potentially recoverable materials, about half of which was textiles/leather. The composition of potentially recoverable materials was similar to residential waste.
- All other materials comprised the remaining 29% of the commercial waste. As with residential waste, plastic film at 9.3% was the most prominent of this material group, followed by diapers and composite materials. Most of the materials have a statistically similar composition as in the residential waste, with treated wood waste being marginally higher in commercial waste.

Aggregate

- Nearly a third of the aggregate waste (residential and commercial combined) was composed of materials that are accepted in Augusta's recycling program. Corrugated cardboard had the highest percentage of these materials, mostly from commercial waste. Glass, which is only accepted at Augusta's drop-off locations, was also a significant component.
- Over a quarter of this waste was potentially compostable material, which was predominantly food waste. This material, through proper source-separation or pre-processing, could be recovered in a dedicated organics recovery program, such as composting.
- Approximately 15% of the aggregate waste was composed of other potentially recoverable materials. Most of this was textiles/leather, which would require a dedicated source-separated recycling program to recover.
- About 28% of the aggregate waste was composed of all other materials, mostly plastic film, diapers, and composite materials.
- Comparing the results of the current WCS to the composition measured in 2004:
 - The percentage of newspaper was significantly lower in the current WCS at almost one-third of the percentage in 2004. This is expected due to the trend toward electronic news media and the commensurate downsizing of many printed newspapers. It also reflects recycling efforts within the Augusta. Most people recognize newspaper as recyclable; therefore, individuals who participate in recycling likely recycle newspaper.
 - The percentage of corrugated cardboard significantly increased since 2004. This may be due to the trend in online shopping, which results in substantial amounts of cardboard.
 - The percentage of mixed paper was also significantly lower than in 2004. As with newspaper, this may be due to a reduced consumption of printed media and materials, such as magazines, or may reflect increased recycling of these materials.
 - The percentage of PET bottles and other plastic containers also increased slightly, and the percentage of glass and metal containers has decreased slightly. This may be due to the increased use of plastic bottles, such as water bottles, and replacement of metal and glass containers with plastic. Total recyclable containers, however, comprised about the same amount of the waste as in 2004.
 - The percentage of food waste increased moderately, while the percentage of yard waste is lower, which may be due to seasonal difference or to yard waste recovery efforts.

Visual Audits

- Over half by volume and nearly 70% by weight of the material included in the visual audits was true C&D debris. Much of this material could potentially be recovered.
 - Clean wood waste had the highest percentage of any material category. This could be potentially recovered through C&D processing techniques and ground for mulch or alternative cover, for example.
 - Drywall was the second largest category by weight (third by volume). Drywall also has the potential to be separated through C&D processing and recovered through composting or other drywall recycling technologies.
 - Treated wood waste, comprising about 15% of the waste by weight, has few outlets for recovery.
- Dirt/soil (14% by weight), which was primarily soil from land clearing, could be recovered as an inert, alternative cover material.
- Corrugated cardboard also comprised a significant amount of the waste by volume. This is readily recoverable in Augusta's existing recycling program.
- Yard waste, which comprised about 6% by weight and volume, could be recovered and ground for mulch, compost, or alternative cover.

2.6.6 WCS SUMMARY AND NEXT STEPS

The WCS provides Augusta with a clearer understanding of the composition of waste generated within Augusta that is disposed in the landfill. The WCS indicates that approximately 30% of residential and commercial waste is composed of materials that are currently accepted in Augusta's existing recycling programs.

Another 40% was either potentially recoverable or compostable if proper programs or infrastructure are developed to collect and process these materials. Of the bulky waste/C&D debris, over 70% by weight could be potentially recovered, primarily through C&D processing and recycling processes. These findings were used as input for the waste reduction element found in Chapter 3 which contains an evaluation and discussion of waste reduction and recycling opportunities for each generator sector.



CHAPTER 3

WASTE REDUCTION ELEMENT

Chapter 3 WASTE REDUCTION ELEMENT

Waste reduction is one of the five core elements of the Augusta SWMP Update. The purpose of this section is to document the current waste reduction and recycling programs and infrastructure in Augusta, identify the greatest waste reduction and diversion opportunities, and identify options to best utilize these opportunities.

3.1 CURRENT WASTE REDUCTION EFFORT

Recycling is currently the primary means of waste reduction in Augusta. Recycling programs and opportunities are available to all residents in Augusta through multiple programs sponsored through Augusta and other private and non-profit organizations. The inventory of recycling programs is listed in Table 3-1, along with accepted materials.

Recycling in the residential service area of Augusta operates in a single-stream program. Starting in 2007, residents had access to two different curbside recycling programs, which were each complete with 18-gallon bins for collecting cardboard, paper, plastics, aluminum, steel, and other metals for recycling. Residents were also able to request a 65-gallon wheeled cart for recyclable materials. As of today, all residential and certain non-residential customers are provided with weekly curbside collection, and on request a 96-gallon wheeled cart for collecting recyclable materials is provided.

During the last planning period per its plan, Augusta has established four drop-off locations for garbage and recyclable items. Residents can drop off cardboard, paper, plastics, aluminum, steel, and other metals for recycling, as well as MSW, scrap tires, and yard waste. August ESD also has an assisted collection service for residents who are unable to take their waste and recycling carts to the curb for collection.

Drop-off Locations:

Location	Address
Eisenhower Park	1488 Eisenhower Drive
Julian Smith Casino/BBQ Pit	2200 Broad Street
Warren Road Community Center	300 Warren Road
Augusta Solid Waste & Recycling Facility	4330 Deans Bridge Road

Table 3-1: Recycling Programs

Type of Program	Service Area	Operators	Materials Accepted
Curbside recycling	Augusta	Advanced Disposal, Orion Waste Solutions	Cardboard, paper, plastic (#1-#7), metals
Tire recycling events	Augusta	Augusta ESD	Tires
TreeCycle your Christmas Tree	Augusta	Augusta ESD	Christmas trees
Drop-Off Centers	Augusta	Augusta ESD	Cardboard, paper, plastic, metal, glass
Drop-off center at the landfill	Augusta	Augusta ESD	Cardboard, paper, plastic, metal, glass, automotive fluids, electronics, tires
Commercial recycling collection	Any interested business	Advanced Disposal, Orion, Metropolitan Waste	Cardboard, paper, plastics (#1-#7), metals, electronics, liquids
Augusta University Recycling	Augusta University	Augusta University Green Team	Cardboard, paper, plastics (#1-#7), metals, cell phones, eyeglasses
Earth Day Event	Augusta	Augusta ESD	Cardboard, paper, plastics (#1-#7), metals, tires, batteries, cell phones
Private entity drop-off	Augusta	Goodwill, Salvation Army, Habitat for Humanity	Used furniture, clothing, shoes, and building materials

Source: Augusta ESD

The Georgia legislature passed Bill 274 in 2011, amending the Georgia Code (Part 1, Article 2 of Chapter 8 of Title 12) that banned yard trimmings from MSW landfills and allowing the disposal of trimmings at lined MSW landfills with operating landfill gas collection systems. The bill states that it was designed to encourage beneficial reuse and promote bioenergy and renewable energy goals. It introduced a hierarchy for handling yard trimmings, which includes:

- (1) Naturalized, low-maintenance landscaping.
- (2) Grass cycling (e.g., “mowing it high and letting it lie”).
- (3) Beneficial use on the site where the material was grown.
- (4) Collection and transport to another site to be:
 - a) Processed for mulch or feedstock for composting.
 - b) Processed for mulch as a bioenergy feedstock.
 - c) Disposed in a lined MSWL which has a gas collection system which provides a beneficial reuse of the landfill gas collected.

The bill also removed the obligation, but reasserted the authority, of Georgia cities, counties, and solid waste authorities, to impose restrictions on yard trimmings that are generated in or ultimately disposed of in its area of jurisdiction. Augusta provides management of yard trimmings. All residents are provided weekly yard waste collection services. Advanced Disposal Systems and Orion Waste Solutions offer curbside collection services for yard waste, including leaves, pine straw, branches, and other

biodegradable materials. There are also several private entities that operate within Augusta and provide yard waste removal and collection services to residential, commercial, and industrial locations.

Shear-Wood Inc. provides a drop-off location for residents to bring their yard waste for disposal. This waste is often chipped/mulched for resale or disposed of in inert landfills. Augusta Solid Waste has established three drop-off locations to provide residents with access to a staffed center for garbage and recyclable items. At these locations, residents can drop off grass clippings, leaves, pine straw, branches, and other biodegradable materials, as well as MSW and recyclable items.

Other programs that benefit waste reduction and recycling include Augusta’s street sweeping program and ESD’s TreeCycle program. Augusta’s stormwater program provides a street sweeping service to remove litter and other debris and properly dispose of waste and potentially hazardous materials. Through ESD’s TreeCycle program, during the first two full weeks of January, residents can place their Christmas trees outside for the yard waste curbside collection services to gather for proper disposal or reuse. Commercial customers also have the option to deliver their trees to one of the three drop-off locations provided by Augusta Solid Waste.

Augusta also has several non-profits and businesses that accept materials for reuse or recycling. Table 3-3 outlines these organizations.

Table 3-3: Businesses Accepting Recyclables

Name	Sector	Material Accepted
Advanced Auto Parts	R	Used motor oil
Augusta Industrial Services	C	Waste oil recovery
Augusta Steel and Metals	R, C	Nonferrous metals
Augusta Urban Ministries	R, C	Used furniture (non-profit reuse)
Batteries Plus Bulbs	R, C	Car batteries
Best Buy	R	Printer cartridges, cell phones, rechargeable batteries
Bricko Farms, Inc.	C	Yard trimmings, wood, leaves
Cartridge World	R	Printer cartridges
Computer Exchange	R, C	Computers, related electronics
CMC Recycling	R, C	Metals (including car parts)
Direct Metals Recycling	C	Ferrous and non-ferrous metals
EcoATM	R	Cell phones
Environmental Alternatives	R	Light bulbs
Goodwill Industries	R, C	Used furniture, used clothes (non-profit reuse)
Habitat for Humanity	R, C	Building materials, furniture, household items, tools
Home Depot	R, C	Rechargeable batteries, fluorescent bulbs
JC Penney	R	Plastic bags (#2 and #4)
Jiffy Lube	R	Used motor oil, transmission fluid, anti-freeze
Newell Recycling	C	Ferrous and non-ferrous metals
Office Depot	R	Electronic waste, printer cartridges, rechargeable batteries
Office Max	R	Printer cartridges, cell phones, rechargeable batteries
Publix Super Markets	R	Paper bags, plastic bags
Salvation Army	R, C	Used clothing, used vehicles for auction (non-profit reuse)
Shear-Wood Inc.	R, C	Yard trimmings, wood, leaves



Name	Sector	Material Accepted
Smurfit-Stone Recycling	R, C	Cardboard, paper, plastics (#1 and #2), metals
Sonoco Recycling	C	Cardboard, paper
Staples	R, C	Electronic waste, printer cartridges, rechargeable batteries
*R= Residential, C= Commercial		

Recycling facilities are found in Table 3-4, along with their accepted recyclable materials.

Table 3-4: Recycling Facilities

Facility Name	Facility Type	Owner/Operator	Areas Served	Materials Accepted	Address	Phone #
CMC Augusta	Scrap metal processor		Augusta	Ferrous and non-ferrous metals	1890 Old Savannah Road, Augusta, GA 30901	706-434-2450
Newell Recycling	Scrap metal processor	Sharon Newell Shirley	Augusta	Ferrous and non-ferrous metals	1359 Central Avenue, East Point, GA 30344	706-432-3880
Westrock Recycling	Materials recovery facility (MRF)		Augusta and Aiken County, SC	Cardboard, paper, plastics, metals	1311 Walker St, Augusta, GA 30901	706-722-9603
Fort Gordon Recycling	MRF	US Army	Fort Gordon	Cardboard, paper, plastics (#1 and #2), and metals	Bldg. 997, Chamberlain Ave, Fort Gordon 30905	706-791-0319
EcoATM	Small electronic processor		Augusta	Cell phones	Multiple locations	

Electronics, household hazardous waste, tires, and white goods are special materials that require specific management procedures to dispose. Table 3-5 provides an inventory of the programs that Augusta-Richmond provides for these special materials.

Table 3-5: Management of Special Materials

Material	Target Sectors*	Management Strategy	Final Deposition
Electronics	R	Collected at community events and by some local businesses.	Dismantled by private recycler. Parts are sold, recycled, or deposited in the landfill.
White Goods	R, C, I, C&D	White goods containing refrigerants must be brought with a certificate of refrigerant removal before they can be disposed of at the landfill.	Landfill; metal scraps are recycled.
Tires	R, C	Accumulating scrap tires on property is illegal. Solid and pneumatic tires can be taken to the landfill as well as community collection events.	Landfill
Large Animal Carcasses	R, C	Large animal carcasses (only- they do not accept live animals) can be brought as long as the landfill is contacted ahead of time.	Landfill
Asbestos-Containing Waste	C, C&D	Asbestos-containing waste must be sealed in leak-proof containers and clearly labeled: "CAUTION – Contains asbestos fibers-Avoid opening or breaking container. Breathing asbestos is hazardous to your health." An Asbestos Disposal Manifest Form must be completed, with the original and one copy submitted at the time of disposal.	Landfill
Biomedical Sharps	R, C	Biomedical sharps must be sterilized and contained in a puncture-proof container before being brought to the landfill. The container should be clearly labeled with the word "BIOHAZARD" and the universal biohazard symbol.	Landfill
Other Wastes	R, C, I	Other special wastes must be tested using Environmental Protection Agency (EPA) approved methods. Concentrations of toxic chemicals must be lower than those stated in the Waste Acceptance Criteria.	Treated then deposited in the landfill.

Source: Waste Acceptance Criteria

* R= Residential, I=Industrial, C=Commercial, C&D= Construction and Demolition

3.1.1 EXISTING WASTE REDUCTION AND RECYCLING PROGRAMS AND INFRASTRUCTURE

Residential Collection

Residential garbage, recycling, and bulky waste collection are divided into three geographically designated collection areas. Two contractors have Solid Waste and Recycling Collection Agreements with Augusta to provide these services:

Advanced Disposal Services Augusta, LLC (Advanced), which services Designated Collection Area #1, and Orion Waste Solutions (Orion formerly Inland Services), which services Designated Collection Areas #2 and #3.



The agreements were executed on August 7, 2012, and service began on June 1, 2013. The initial term of the agreements ends on December 31, 2021 but may be renewed for two or more two-year terms under mutual agreement between Augusta and contractors.

Garbage, recycling, and bulky waste collection occurs Monday through Friday. Each residence is offered these services once per week on the same day of the week.

Advanced and Orion subcontract bulky waste and yard waste collection to A-1 Sanitation Services and Metropolitan Waste, Inc., respectively.

The following services are provided as part of the base level of residential collection services:

- **Garbage** – Augusta has a two-tiered system in which residential customers can select either a 35- or 95-gallon garbage cart. A lower service fee is charged for the smaller cart size, which allows residents to “right-size” their service fee to their waste generation and encourages participation in recycling.
- **Recycling** – Single-stream recyclables are collected in a 95-gallon recycling cart provided by Augusta; an extra cart is available for an additional fee. Accepted materials include newspaper, mixed paper, cardboard, paperboard or chipboard, plastic #1 and #2 bottles and containers, aluminum cans, and steel/tin cans.



- **Yard waste** – Leaves, grass clippings, branches, etc. must be bagged in Kraft paper bags or open top garbage cans clearly marked “Yard Waste.” Each bag or container can be no larger than 32 gallons and cannot exceed 50 pounds. Brush may be bundled and tied and is restricted to no more than 5 feet in length. Each pile cannot exceed 5 feet x 5 feet x 10 feet or 10 CY.
- **Bulky waste** – Bulky waste includes any household items that are too large to fit in the garbage cart. The most common bulky waste items are furniture, mattresses, and appliances. Each pile cannot exceed 5 feet x 5 feet x 10 feet or 10 CY.

Currently, bulky waste and yard waste are collected in the same truck. Each residential customer is allowed two piles (yard waste and bulky waste) per service day.

The cities of Blythe and Hephzibah have private haulers that service their residents with curbside recycling available on a subscription service basis.

Residential Recyclables Processing

Prior to August 2007, residential recyclables were transported directly from collection routes in Augusta to the North Augusta MRF located at 67 Claypit Road, North Augusta, SC. This MRF was originally built in 1993 to process recyclables from both Augusta and North Augusta. Today, it processes both recyclables and solid waste from around the Central Savannah River area.



North Augusta Material Recovery Facility

Starting when the Augusta converted to single-stream recycling in August 2007, curbside recyclables were delivered to a transfer station located at 3946 Goshen Industrial Boulevard in Augusta (Goshen Transfer Station). Initially, recyclables were then transferred to Pratt Industries and SP Recycling Corporation in Atlanta for processing. Currently, clean recyclables are transferred to the North Augusta MRF for processing.



Goshen Transfer Station

After collection vehicles tip the recyclable materials at the transfer station, a front-end loader operator visually inspects the loads and separates piles based on level of contamination. Highly contaminated loads are loaded into open top transfer trailers and taken to the Landfill. The lower contamination recyclables are loaded into a transfer trailer and taken to the North Augusta MRF.

Information for recycling collected in 2018 is provided in Table 3-6.

Table 3-6: 2018 Augusta Curbside Recyclables Received at Goshen Transfer Station

Month	Tons
January	395
February	555
March	565
April	496
May	553
June	487
July	499
August	486
September	456
October	469
November	549
December	<u>506</u>
Total	6,016

(Source: Augusta ESD)

ESD staff stated that approximately one transfer trailer load is being sent from the transfer station to the MRF per week; approximately 10 transfer trailer loads are delivered to the Landfill per week to dispose of the highly contaminated recyclables (i.e. contains non-recyclable material). This ratio indicates that the contamination rate is extremely high. A visual inspection of the recycling loads received at the transfer station confirmed the high degree of non-program material (solid waste) which is appearing in the curbside recycling containers.

A further study was conducted of curbside recyclable contamination. The Apple Valley Neighborhood Association invited KAUG and ESD to conduct a curbside container audit based on its member’s observations that a large quantity of non-program material was appearing in the recycling bins in the neighborhood. Members of the Keep Augusta Beautify (KAUG), ESD and Apple Valley Neighborhood Association planned and conducted weekly audits of approximately 400 recycling bins set out in the Apple Valley neighborhood of Augusta during the month of October 2018. A significant finding was that 90% of the containers audited contained some amount of nonrecyclable non-program material during the first week. “Oops” tags, designed by KAUG, were placed on bins containing non-program material. The tabs described what nonrecyclable material had been found in the container and what materials are recyclable and part of Augusta’s program. Over the course of four week the percentage of containers with non-program material decreased, demonstrating the benefits of education, outreach and direct feedback. There was a follow up meeting on 14 June 2019 with the Association.

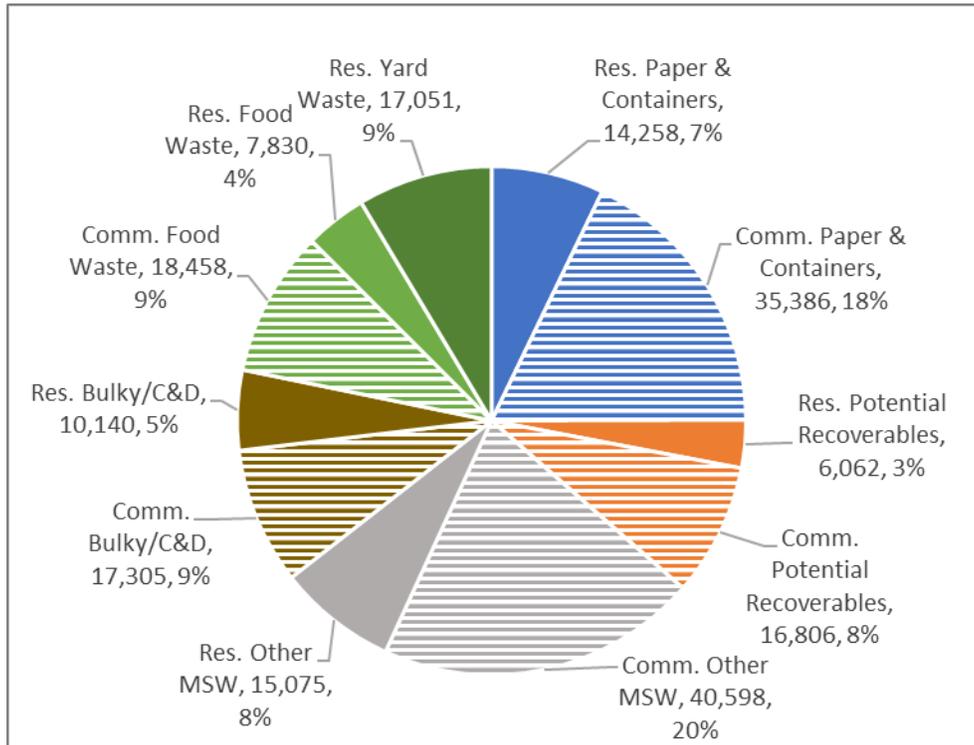
Other City-Sponsored Recycling and Cleanup Programs

ESD sponsors other programs to collect and manage recyclables and related materials, including the following:

- **Metals Recycling** – ESD accepts loads of metal waste (pipe, wire, washers, dryers, refrigerators, lawnmowers, tire rims, and other large metal household items) at its facility for recycling.
- **Scrap Tire Recycling** – Augusta residents may bring tires to the facility for free on the third Saturday in February, May, August, and November from 8 a.m. to noon.
- **Civic Group Tire Collection Program**– ESD will pay \$2.00 per passenger vehicle tire to civic or non-profit groups that collect tires within Augusta and deliver them to its facility.
- **Event Recycling Program** – ESD loans recycling bins to event sponsors for community events.
- **Neighborhood Cleanup Program** – Small groups of residents are provided access to a dumpster and supplies to clean up their area.
- **Volunteer Litter Cleanup Program** – ESD provides sticks, gloves, and bags to groups, clubs, or organizations that organize litter cleanups in the Augusta area.

3.1.3 WASTE REDUCTION OPPORTUNITIES

Figure 3-1 depicts the results of the waste composition study as applied to estimated quantities of in-county residential and commercial MSW and commercial bulky waste/C&D debris that were landfilled in 2017.



Note: This chart represents the estimated 199,000 tons of in-county residential and commercial waste that was landfilled in 2017. For the purposes of this chart:

- Paper & Containers includes newspaper, corrugated containers, office paper, other recyclable paper, PET and HDPE bottles, non-bottles plastics #1 and #2, other plastic containers, tin/steel and aluminum cans, and glass containers.
- Other Potential Recoverables includes aseptic containers, bulky, rigid plastics, expanded polystyrene food service and packaging, aluminum foil and trays, ferrous and nonferrous metals, textiles, special wastes, electronics, C&D debris and tires.

Figure 3-1: Estimated Composition of Augusta Waste Landfilled In 2017 (Tons, % by Weight)

Figure 3-1 helps identify the greatest opportunities for increasing waste diversion and therefore serves as a guide for the types of programs and technologies with potential to significantly impact waste diversion.

- Recyclable materials currently accepted by Augusta in its existing recycling program comprise approximately 25% of the in-county waste that was landfilled. Residential recyclables (solid blue wedge) represented 7% and commercial recyclables (striped blue wedge) the remaining 18%.

- Residential yard waste (dark green wedge) represents an estimated 9% of in-county waste landfilled. This material had previously been collected separately and mulched but is currently landfilled.
- Commercial bulky waste/C&D debris represented an estimated 9% of in-county waste disposed in 2017. The composition of this waste stream can be highly variable; however, Figure 3-2 provides the estimated composition of this stream based on the visual audits conducted in May 2018. The most readily recycled material in the composition study is metal; therefore, there is little opportunity for economical waste recovery in this waste stream.

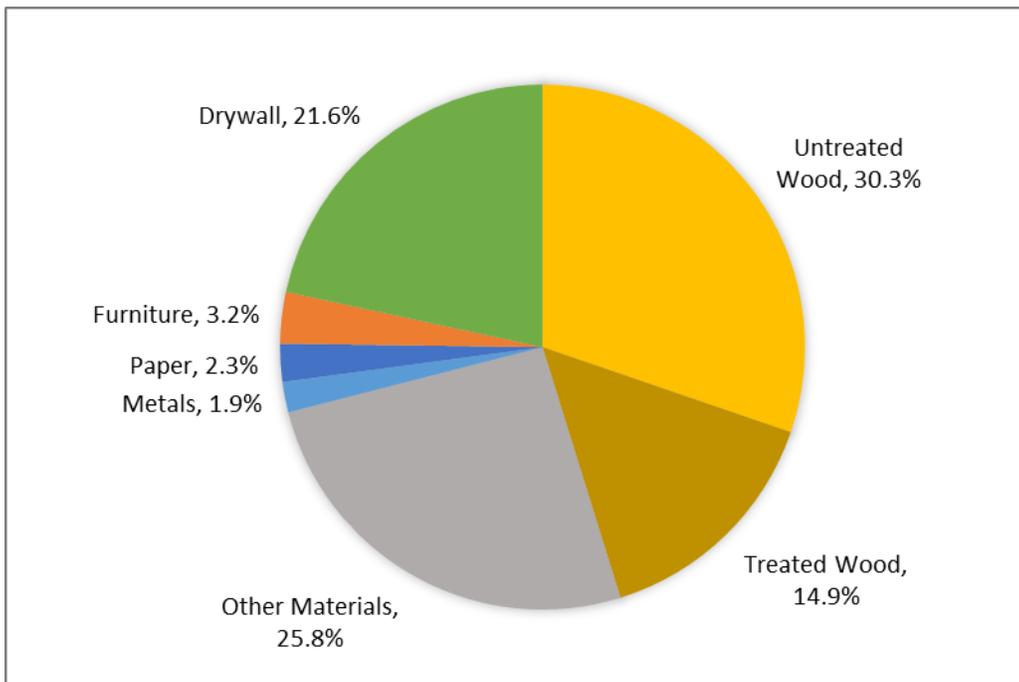


Figure 3-2: Composition of In-County Commercial Bulky Waste/C&D Debris Landfilled in 2017 (% by Weight)

3.2 WASTE REDUCTION STRATEGIES

Based on the evaluation of Augusta’s recycling programs, multiple options were identified for developing a waste reduction strategy. Option recommendations were prioritized by their potential impact in the near-term. Longer-term options are also described but are not discussed in detail.

3.2.1 RECYCLING PROGRAM COORDINATOR

To establish effective waste reduction programs, Augusta will need a knowledgeable, committed individual to develop, implement, and monitor them. Recycling programs do not just “happen,” and local governments cannot rely on private contractors to implement comprehensive programs on an ongoing basis. Therefore, a key recommendation is the addition of a full-time Recycling Program Coordinator (RPC) whose first priority would be to provide consistent, effective educational outreach regarding existing recycling programs. In addition, they will be aware of current market trends and local conditions (business interest, available materials, etc.) in order to identify and promote other waste reduction plans based on Augusta’s priorities. The RPC would oversee both residential and commercial waste reduction and recycling programs. Based on the current organization structure the RPC function should be part of the Keep Augusta Beautiful Program which is part of Augusta’s Environmental Services Department.

3.2.2 IMPROVED DATA COLLECTION

Accurate data is a critical element in making policy and program decisions. The quantities of in-county waste and recyclables estimated in this plan had to be estimated based on hauler surveys. Recommendations to improve data collection include the following:

- Revise scale house codes and procedures so that waste quantities can be determined by source (e.g., county, municipality, out-of-county, etc.) and type (e.g., household garbage, commercial garbage, bulky waste, C&D debris, yard waste, etc.).
- Weigh recyclable materials received at the transfer station, as well as contaminated loads transferred to the Landfill and clean loads transferred to the North Augusta MRF. Ideally, contamination in residential recyclables would be minimized so that collection vehicles could deliver loads directly to the MRF rather than the transfer station. Until that time, scales could be installed at the transfer station to weigh inbound and outbound loads. Alternatively, contaminated recyclable loads delivered to the Landfill should be weighed as a specific code at the Landfill, and loads delivered to the MRF should be weighed at the MRF. ESD staff would need to monitor this data closely to ensure an accurate accounting of the recyclables collected and their final disposition.

3.2.3 RESIDENTIAL RECYCLABLE MATERIALS

ESD staff estimates that approximately 30% of residents participate in the existing residential recycling program. Based on observed contaminants levels at the transfer station, approximately 80-90% of the materials collected by this program are too contaminated by non-program (solid Waste) to be accepted

by recyclables processors; thus, they are being landfilled. Typical single-stream recycling programs have contamination rates of 10-20%, but once contaminant levels are above 20%, most processors will refuse to accept the materials. Visual observation of contamination of Augusta single-stream recyclables are on the order of 50%.

Based on the status of Augusta's existing residential recycling program, educational outreach regarding what should and should not be put in the single-stream recycling carts is critical. In addition, Augusta should work with its single-stream recyclables collection contractors to check for contamination. The use of recycling carts and automated side-load vehicles is not conducive to this type of monitoring; however, Augusta should work with its contractors to develop a system to spot check a certain number of households on each route. Repeat offenders should be reported to the Augusta ESD, who can then reach out to these customers and, if the issue is not resolved, remove their recycling cart.

3.3 MULTI-FAMILY AND COMMERCIAL RECYCLABLES

Multi-family complexes can recycle at Augusta's four drop-off locations. Unfortunately, lack of convenience keeps participation low. Commercial businesses can contract with private haulers to collect recyclables. The primary commodity collected from businesses is cardboard.

A variety of approaches can be used to increase commercial/multi-family waste diversion. The strategies considered most viable for Augusta in the near-term are discussed below.

3.3.1 TECHNICAL ASSISTANCE

Nearly one-third of housing units in Augusta are multi-family residences, along with an estimated 4,300 employer-business establishments. Enlisting more multi-family complexes and businesses to participate in recycling will require educational outreach regarding waste reduction and recycling with technical assistance program to provide the tools and knowledge to set up effective programs. The City of Atlanta has mandated multi-family residential recycling since 2008 and has used city ordinances as well as programs to facilitate implementation. Outside of Georgia, government in San Francisco, Seattle, and Montgomery County, Maryland have all faced significant challenges and implemented broad strategies to address multifamily recycling.

Much of the information needed for the residential educational outreach campaign would also apply to supporting a multi-family and commercial technical assistance program. Additional elements of technical assistance to multi-family and business establishments include the following:

- Property owner and manager training – These are typically the individuals responsible for executing onsite waste reduction and recycling programs.
- “Toolkits” for program development – Step-by-step instructions for setting up a recycling program, a list of recyclables to target, a list of service providers, and sample educational materials. Toolkits should be available in hard copy and electronically.

- Hands-on technical assistance – Providing hands-on technical assistance is generally more effective than training alone. Such assistance includes support for collection logistics and container placement.
- Right-sizing garbage service – If a multi-family complex or a business initiates a recycling program, it then follows that the quantity of garbage generated, and level of garbage service needed should decrease. The savings in garbage collection can sometimes offset the additional cost for recycling. Property managers and businesses often need assistance in understanding this concept and estimating their service needs.
- Food waste reduction – For businesses and institutions that generate substantial quantities of food waste (e.g., grocery stores, restaurants, schools, etc.), information regarding food waste reduction should be incorporated into the technical assistance. This might include quantifying food waste generation, encouraging proper portioning at schools and institutions, and encouraging the sale of misshapen or soon-to-expire produce for reduced prices at grocery stores. The ESD can help businesses understand that reducing wasted food can be cost-effective. Numerous resources are available, including but not limited to the following:
 - U.S. Food Waste Challenge ([FWC]; <http://www.usda.gov/oce/foodwaste/index.htm>) – Organizations in the food chain that currently create food waste are invited to join the FWC. By joining the FWC, organizations and businesses demonstrate their commitment to reducing food waste, helping to feed the hungry in their communities, and reducing the environmental impact of wasted food.
 - EPA Food Recovery Challenge ([FRC]; <http://www.epa.gov/sustainable-management-food/food-recovery-challenge-frc>) – FRC is part of EPA’s Sustainable Materials Management Program that provides participants with access to data management software and technical assistance to help them quantify and improve their sustainable food management practices.
- Food waste donations – Augusta could also take a more active role in facilitating partnerships between commercial food waste generators and organizations that accept food to combat food insecurity. Options worth considering include the following:
 - Create a database where businesses with food to donate could connect with food banks or other entities looking for food. This could essentially be a digital food clearinghouse and could even be developed as a mobile app for real-time updates on what food is available and what food is needed.
 - Educate businesses about the benefits of making food donations. According to the Food Waste Reduction Alliance, the primary barrier to food donation is the perceived risk of liability. To alleviate this concern, Congress enacted the Bill Emerson Good Samaritan Food Donation Act in 1996. This act absolves any entity that donates food from criminal or civil liability, except in cases of gross negligence or intentional misconduct.
 - Educate businesses about the cost savings associated with making food donations. In addition to potential disposal cost savings, Section 170 of the Internal Revenue Code allows some businesses to earn an enhanced tax deduction for donating selected surplus property, including food. The code provides that wholesome food that is properly saved, donated to

an approved agency, and properly receipted is eligible. This enhanced deduction is equal to one-half of the donated food's appreciated value, with the limitation that the total deduction cannot exceed twice the donated food's basis cost.

- Environmentally preferable purchasing – An important part of a comprehensive technical assistance program is encouraging businesses to purchase products based on not only cost but also product longevity, recycled content, recyclability, and toxicity.

Many multi-family complex and business owners and managers have a desire to operate in a sustainable manner and implement a waste reduction and recycling program but simply do not have the know-how or resources to do so. A technical assistance program can provide property owners/managers with the tools needed to jump start their programs.

3.3.2 LEAD BY EXAMPLE

Augusta's efforts in waste reduction can serve as models for other businesses. This includes establishing recycling programs in government facilities, parks, and other public venues and places, as well as implementing environmentally preferred purchasing policies. Highly visible recycling in public areas helps instill a mindset of sustainability and encourages recycling at home, work, and play.

3.3.3 CONTRACTED SERVICE AND ALL-IN FEE STRUCTURE

Augusta could consider including multi-family and commercial collection service in its collection contract with a service fee that includes both garbage and recycling collection. This would be similar to residential pricing in which all residents pay for curbside recycling as part of their base solid waste fee. All multi-family complexes and businesses would pay for recycling service as part of a base service fee. Some types of businesses generate more recyclable materials than other; therefore, an equitable fee structure would need to be developed. While not a common practice, San Francisco and Salt Lake City utilize ordinances or contract mechanisms to ensure business and multi-family properties utilize a recycling program, which could help inform a local program.

3.4 LONGER-TERM WASTE REDUCTION

Based on the status of Augusta's existing programs, improvements to the existing recycling services to reduce contamination and increase participation represent the simplest and most economical options for the immediate future. For communities that have the financial resources and political desire to implement more aggressive waste diversion strategies, other commonly used options are described below.

3.4.1 COMMERCIAL BULK WASTE/C&D DEBRIS

C&D debris reduction can start with efforts to source-separate recyclable or reusable materials by type, usually at the jobsite. This usually requires more upfront resources (labor and containers) but can reduce disposal costs. For example, rather than building demolition, it would require deconstruction, which allows materials to be reused or recycled instead of disposed.

Various policies and programs can be implemented to encourage or require source-separation and recovery of materials prior to collection. They fall into three general categories: education, incentives, and regulation. Typically, local governments first seek to stimulate voluntary C&D debris recycling by employing education and market incentives before adopting direct regulatory methods.

Potential outlets for metals, cardboard, and clean wood waste exist. Augusta could further explore and confirm these outlets and develop a campaign to educate building contractors about source-separating materials and the potential cost savings associated with it. The ESD could further explore establishing lower tipping fees at the Landfill for segregated types of C&D materials that could be recycled.

Augusta can also evaluate the feasibility of processing C&D debris to recover materials. The scale of operation depends on the types and quantities of materials received. Mechanized systems generally require at least 50,000 tons per year to be cost-effective. Small-scale operations generally use a small loader with a grapple and manual labor to separate targeted, high-value recyclable materials. Low capital investment and minimal space requirements might make this a viable option. Cardboard and metal could potentially be recovered, as well as concrete and brick rubble, which can be reused for landfill access roads.

3.4.2 FOOD WASTE RECOVERY

Food waste contributes an estimated 13% of the in-Augusta waste that is landfilled. When seeking options to divert food waste from disposal, the EPA Food Recovery Hierarchy first recommends reducing the volume of food wasted, followed by feeding hungry people and animals, then options such as digestion and composting, with disposal as the last resort.

Information regarding food waste donations has already been discussed. However, not all food waste can or will be donated. Therefore, the ESD could evaluate the feasibility of a food waste recovery and composting program. A composting program could be established in-house or by seeking to partner with a private processor.

Collecting commercial food waste, especially from large food waste generators, is often the first step in initiating a food waste recovery program. It enables a community to focus on a smaller number of generators and to help ensure a relatively clean stream of source-separated food waste.

Residential food waste is generally more challenging to collect than commercial food waste, especially from multi-family units, due to high levels of contamination. Therefore, residential food waste composting programs, if pursued, should generally start with opt-in programs for specific service areas so that self-selecting residents who are motivated for program success can participate.

3.4.3 MANDATES AND BANS

Communities with some of the highest reported recycling rates have employed recycling mandates or disposal bans to help them achieve these rates. Jurisdictions that have used disposal bans and mandates typically have established infrastructure and mature programs, with bans and/or mandates implemented

if voluntary programs have failed to achieve desired diversion rates. In addition, jurisdictions implementing such bans and mandates also utilize other tools, such as technical assistance and incentives in support of their recycling programs. Most bans and mandates are phased in over time, preferring to use notifications and technical assistance to encourage compliance first. After an initial grace period, they then utilize code enforcement staff to monitor compliance and impose fines or fees on non-compliant businesses.

3.4.4 PLANNING

Planning is a fundamental part of effort to identify opportunities and implement programs for waste diversion and source reduction. For each of the options identified above, the planning process should include a review of the following:

- Policies needed to implement or maximize effectiveness of the option. This will include relevant enforcement policies, disposal bans or recycling mandates, product bans, procurement guidelines, etc.
- Research existing, successful programs in similar jurisdictions associated with the option and key elements of these programs that maximize effectiveness.
- Identify infrastructure or facilities that are an integral part of each option. This will include land purchase, permitting, buildings, processing equipment, and administrative and support facilities.
- Prepare a cost-of-service review that estimates capital and operating costs in order to determine if rates or fees structures need to be modified and what fees need to be charged in order to pay for the new services. This review should include a sensitivity analysis to determine if the financial model is overly dependent on commodity market pricing or other conditions that may be highly volatile.
- Review the method of execution of the program, including public ownership and operation, a public-private partnership, or administration of fully privatized operations.



CHAPTER 4

WASTE COLLECTION

Chapter 4 WASTE COLLECTION

Augusta, through its ESD, manages and facilitates solid waste collection services in the planning area to promote a clean community for residential and commercial entities. The ESD contracts for and actively monitors residential and downtown curbside and other waste collection programs. The planning area also services a variety of private collection companies that service commercial entities.

4.1 INVENTORY OF CURRENT COLLECTION PROGRAMS

4.1.1 RESIDENTIAL COLLECTION SERVICES

Augusta manages a collection program which services approximately 65,000 homes, small business and over 10,000 vacant lots. Collection services can include curbside waste collection, recycling, bulk waste and yard waste. Yard waste is generated from both occupied residence and vacant lots which are regular maintained by Augusta.

All residential units and unoccupied locations receive weekly collection services funded by a fee-based system. The fees are assessed annually to property owners. Others, including small businesses, multi-family units (more than five units), mobile homes (more than 10 units) have the ability to opt into the service. Waste is collected utilizing roll carts.

4.1.2 DOWNTOWN COLLECTION SERVICES

Augusta's downtown is a mixed-use district with many unique features. It is expected to continue to evolve within the planning period through redevelopment and revitalization. Collection services are provided by both Augusta and private collection companies in the downtown area.

Augusta's downtown residential customers are provided with once-a-week pickup for garbage, recycling, yard waste and bulk waste by a contracted hauler (Advanced Disposal) under an Augusta ESD managed program. Commercial customers have the option to choose between opting into curbside cart service and contracting with a private collection company. Recycling carts are available for businesses who opt into the service.

Based on the latest downtown container survey, which was conducted by ESD in January 2017, the ESD managed program was servicing approximately 140 unique commercial and residential downtown addresses. Of this total, 120 were commercial and 20 were residential. This represented 33% and 40% of the unique commercial and residential downtown addresses, respectively.² The ESD issued and was servicing 410 blue plastic roll carts for garbage and recycling collection. This included approximately 325 refuse and 85 recycling carts, as many properties had multiple containers.

² Approximately 425 "residential" units were reduced to approximately 50 unique residential property addresses primarily because of two large multi-unit properties. Also, there were 380 commercial units at the 350 unique addresses.

Multiple private collection companies provide commercial container service, including front-load and roll-off container service. As part of the solid waste planning a downtown commercial container survey was conducted in December of 2018 for the area bound by Green Street and the Augusta Riverwalk between 4th and 13th Streets. The survey identified approximately 100 commercial containers, including 75 front-load type containers and 24 roll-off containers. The front-load containers are semi-permanent and are set out near businesses, often in the back or in a parking lot. Roll-off containers are primarily used for managing construction waste and are temporarily placed in parking lots or on streets near the construction. Approximately six private companies provide front-load service and nine provide roll-off service.

4.1.3 COMMERCIAL COLLECTION SERVICE

The approximately 8,000 businesses and institutions in the planning area primarily contract with private collection companies to collect and/or transport their solid waste and recyclables. The Georgia Department of Natural Resources (DNR) maintains a list of haulers licensed to haul waste in the planning area. The most recently available list includes approximately 70 entities as shown in Table 5.1. This list is updated annually and may not reflect more recent additions. Among the list are national, regional, and local firms, as well as firms that haul only their own material.

Table 5.1 - List of Permitted Collection Entities in Augusta *

Entity Name	Address	City	Zip
A. J. Kellos Construction Co., Inc. of Fl.	Post Office Box 14759	Augusta	30919
A-1 Sanitation Service, Inc.	3458-A Peach Orchard Road	Augusta	30906
Ace Maintenance & Service, Inc.	DDEAMC Building 300	Ft. Gordon	30815
Advanced Disposal Service Augusta	1799 Marvin Griffin Road	Augusta	30906
ATC Development	220 Boy Scout Road	Augusta	30909
Augusta Disposal & Recycling, Inc.	851 Triangle Industrial Court	Evans	30809
Augusta Green, Wood & Mulch, Inc.	3011 Old McDuffie Road	Augusta	30903
Augusta Industrial Service, Inc	2614 Mike Padgett Hwy	Augusta	30306
Augusta Public Works	4330 Deans Bridge Road	Blythe	30808
Barton & Barton Contracting of Augusta, Inc.	1225 E'Antignac Street, Unit 2	Augusta	30901
Berry Smith Sanitation	1308 New Savannah Road	Augusta	30901
Big Fellow Sanitation	2907 Larkspur Drive	Augusta	30906
Big Fellow Sanitation Service	2907 Larkspur Drive	Augusta	30906
Biggers Enterprise	1322 Wallace Street	Augusta	30901
C&B/Fosters/Inc	200 Norton Road	Augusta	30906
C.A. Black Builders Collection Operation	1927 Satcher Blvd	Augusta	30906
Charles Moore	4022 Rio Pinar Drive	Augusta	30906
Coleman Sanitation	1645 Nixon Road	Augusta	30904
Commercial Trash Removal, Inc.	Building 61709	Augusta	30907
Country Way, Inc.	723 Laney Walker Blvd.	Augusta	30903
CSRA Waste, Inc.	P. O. Box 211215	Augusta	30917



Entity Name	Address	City	Zip
David Smith Sanitation	4735 Windsor Spring Road	Hephzibah	30815
Davis Hauling Company, Inc.	100 Apac Industrial Way	Augusta	30907
Delco Sanitation Inc.	4549 Stonewall Ct.	Hephzibah	30815
Delco Sanitation, Inc.	1441 Hephzibah Mcbean Road	Hephzibah	30815
Economy Sanitation	3350 Peach Orchard Road	Augusta	30906
Economy Sanitation Collection Operation	3350 Peach Orchard Road	Augusta	30906
Evans Sanitation	3320 New Savannah Road	Augusta	30906
Freedom Waste Services	Not Available (NA)	NA	NA
Ga - Carolina Stucco, Inc.	3018 Milledgeville Road	Augusta	30904
H. Brittingham Mechanical, Inc.	2723 Old Louisville Road	Augusta	30906
Hester Sanitation Service	3715 Drayton Drive	Augusta	30906
Hydro Chem Industrial Services	4153 Old Savannah Rd	Augusta	30906
Orion Service Corporation	1561 Doug Bernard Parkway	Augusta	30906
Isiah Gray Sanitation	2432 Barton Chapel Road	Augusta	30906
J & B Construction and Services, Inc.	3550 Gordon Highway	Grovetown	30813
J. V. Summers	3319 Kenny Road	Augusta	30906
Jack R. Nordahl Builders, Inc.	2905 Richmond Hill Road	Augusta	30906
Jenkins Landscape Construction Services	3002 Hollins Drive	Hephzibah	30815
John W. Powell, Sr. Sanitation.	416 Martin Luther King Road	Keysville	30816
Joyce Sanitation	1009 Cliff Ayers Road	Augusta	30906
Juanita Wiley	159 Golden Avenue	Augusta	30906
Mabus Brothers Construction Co., Inc.	920 Molly Pond Road	Augusta	30901
Mae & Moe Enterprises	2206 C Brown Road	Hephzibah	30815
Mann Environmental Services, Inc	4330 Deans Bridge Road	Blythe	30805
Marcus Smith Sanitation	4735 Windsor Spring Road	Hephzibah	30815
Marks Clearing & Grading, Inc.	4704 Fulcher Road	Hephzibah	30815
Meco Inc. of Augusta	1234 Gordon Park Road	Augusta	30901
Metropolitan Waste Collection Operation	2724 Deen Ave	Augusta	30906
Metropolitan Waste, Inc.	3318 Milledgeville Road	Augusta	30909
Middleton's Sanitation	197 Dan Bowles Road	Augusta	30901
Mims Landclearing & Grading	2218 Mims Road	Hephzibah	30815
Mobley Construction Company of Georgia, Inc.	4176 Belair Frontage Road	Augusta	30909
MSI Construction Co.	4119 Mike Padgett Highway	Augusta	30906
O & H Sanitation Inc.	2907 Mike Padgett Hwy	Augusta	30916
Orange Service Company, Inc	207 Sand Bar Ferry Road	Augusta	30901
Peach Contractors, Inc.	3127 Damascus Rd	Augusta	30909
R. Smith Sanitation	2351 Highway 88	Hephzibah	30815
Ray Hitt, Inc.	724 Chamblin Road, P. O. Box 175	Grovetown	30813
Removal & Abatement Technologies, Inc.	609 Hale Street	Augusta	30901
Ronnie Lee Carter	2725 Barclay Street	Augusta	30815



Entity Name	Address	City	Zip
Sam F. Hurley, General Contractor	1080 Horseshoe Road	Augusta	30906
Sammie Powell - Powell Sanitation	Post Office Box 192	Keysville	30816
Scott's Woodworks	428 Crawford Ave	Augusta	30904
Sig Cox, Inc.	1431 Greene Street	Augusta	30901
Smurfit Recycling Corp Collection Operation	1311 Walker Street	Augusta	30903
Southern Roofing & Insulation Company	81 5Th Street	Augusta	30901
Southland Waste Systems, Inc.	148 Industrial Drive	Thomson	30824
Stallion Lawn & Tree Service, Inc.	1774 Powell Road	Augusta	30909
Stratton Home Transport/Services	2933 Milledgeville Road	Augusta	30904
United Brokerage Co., Inc.	496 Lancy Walker Blvd.	Augusta	30901
United Distributors	2521 Reynolds Industrial Road	Augusta	30907
Varnado Home Improvement	2454 Windsor Spring Road	Augusta	30906
Victor Cantrell Hauling Service	3530 Byron Place	Augusta	30906
W. H. Reeves Co., Inc.	3860 Sullivan Hartfield Road	Evans	30809
Waste Management of Augusta – Aiken	208 Prep Phillips Drive	Augusta	30901
White James B. Sanitation	2309 Old Sav. Road	Augusta	30906
Willie J. Wimberly	1004 7Th Avenue	Augusta	30901
Wrights Sanitation Collection Operation	3318 Millville Road	Augusta	30909
Source: GA Department of Environmental Protection file = SW-COL-OP-10-11-2018			

4.2 ASSESSMENT OF COLLECTION PROGRAMS

The residential waste collection services provided and managed under contract by Augusta have historically been of high quality, measured by the small (under 1%) average percentage of missed services in any given month. Service is monitored daily and measured monthly through a 311 hotline and by ESD staff utilizing software which is integrated with vendor collection operations. However, there have been periods (some lasting days or weeks), in which certain groups of residents have experienced material lapses in service. These lapses have been attributed to disruptions of the contracted service provider’s operations due to driver shortages, equipment issues, and/or route management software.

In the Spring of 2018, ESD conducted an assessment of residential customer satisfaction through use of a survey which included 5,000 residential customers. Out of approximately 460 respondents (a statistically significant sample size of the 65,000 residential customers), 88% reported satisfaction with their collection service. 72% responded that in the past year, they had not observed discourteous nor rude behavior, collection drivers breaking traffic laws, nor experienced damaged garbage containers or property; however, 50% of respondents reported that in the same year, they did experience issues with cart placement, littering, leaks and spills that were not cleaned properly, and/or at least one missed pickup. Future surveys are planned to develop additional insights.

ESD conducted an assessment of the downtown garbage and recycling collection in late 2018 and early 2019. In the course of the development of this solid waste plan meetings were held with downtown stakeholders and issues and options were explored related to the service level (how much and how often) of collection available and additional recycling opportunities. Multiple issues were identified including poor aesthetics, few recycling options for businesses, and limited space which prevented businesses from setting out a commercial waste or recycling container. Subsequently a study was conducted of potential options for addressing these issues.

This study generated multiple options including a) valet (door-to-door) collection, b) underground vacuum systems, c) underground vault systems, d) compactor stations, e) “Big-Belly” (mechanized/compactor) sidewalk containers, and f) combination solutions. While each of these options has been successful in other venues, the study prioritized compactor stations for further evaluation by stakeholders as well as a pilot program.

Compactor stations provide central locations for solid waste and recycling disposal and collection. These compactor stations are enclosed, secure and available 24 hours a day, 7 days a week, eliminating solid waste containers from sitting on the sidewalk awaiting collection. This provides a clean, attractive downtown streetscape - free of clutter, unpleasant odors, unwanted pests, and debris. The stations would be distributed in to up to seven zones. All businesses and residences in the Compactor Zones, that did not have dedicated service would use the sealed compactor units for solid waste disposal (which includes both trash and recycling).

Businesses and residential customers empty the roll carts using tippers or place bagged trash into the compactors. Each location also has a drop-off area for recycling (bottles, cans, plastics, mixed paper and cardboard). Businesses and residents in the compactor zone could opt-in and register with the ESD for compactor use to receive a fob (electronic key). The compactors are housed in aesthetically attractive fencing creating an enclosed area with video surveillance which can be accessed only with a key fob provided by ESD.

In the planning area industrial and commercial business have multiple options for collection and recycling providers. Further evaluation of the variety ,quality service level of recycling options available for industrial and commercial businesses is a potential area of future study

Illegal dumping, primarily tires, continues to be an issue in the planning area. It is illegal and can result in felony charges. The ESD supports Augusta-wide tire cleanup programs and holds fee free tire recycling days at the landfill. Local law enforcement agencies investigate dumping cases.

4.4 CONTINGENCY COLLECTION OPTIONS

There are two types of potential situations that would require contingency collection options: 1) widespread interruptions of the regular collection of the approximately 65,000 residential and small businesses that are serviced under Augusta’s residential program, and the generation of trash as a result of severe weather events.

Augusta’s residential collection program is serviced by two primary contractors. These two private hauling companies both have multi-state and multi-locations operations footprints. Performance under the contract is monitored daily through software and a customer 311 hotline. The contract contains penalty provisions for service interruptions (i.e. missed services). During the contract period, there have been instances of service interruptions caused by equipment issues and temporary labor shortages. When these instances occurred, the Environmental Service’s department and contractors worked closely to resolve them. In the most significant instances, the contractors called upon drivers, supervisors, and equipment resources from their other operations to re-establish regular collections as a contingency measure to re-establish a high level of service.



CHAPTER 5

WASTE DISPOSAL

Chapter 5 WASTE DISPOSAL

This section addresses the requirement that solid waste management plans describe the type and size of solid waste handling facilities located within the jurisdiction.

Assessment and assurance of adequate disposal options over the entire planning period is a core element of the plan and the focal point of this element. This section considers both a “business as usual” scenario as well as contingency disposal strategy.

5.2 DISPOSAL INVENTORY

The Augusta Deans Bridge Road Landfill, permit number 121-018D, is the only operating MSWL in the planning area. Under its permit, it can accept a range of non-hazardous solid wastes, including municipal solid wastes, C&D waste, inert waste, and industrial wastes.

A new construction and demolition (C&D) landfill has been proposed for the planning area. Dixon Airline Recycling LLC approached the Augusta Commission for a letter of Consistency for the siting and development of a new C&D landfill within the planning area. In September of 2020, based on merits of the project, the Commission passed a resolution to include the proposed facility (Dixon Airline) in this solid waste plan update. The site for the proposed C&D landfill is located south of the City of Augusta in Richmond County near the intersection of US Highway 56 and Tobacco Road. The site covers approximately 151 acres. Both an inert and a C&D landfill have been proposed for the site. The facility will be required to successfully complete the permitting process with the Environmental Protection Division (EPD) of the Georgia Department of Natural Resources to become operational.

The U.S. Army operates a C&D debris landfill at Fort Gordon. The EPD permit number is 121-014D. It is not available for use by the public.

5.3 ADEQUACY OF CAPACITY OVER PLANNING PERIOD

In the latest (2018) capacity report published by the EPD, Augusta had a reported 62.7 million CY of permitted airspace with an estimated remaining life of 130 years. The average rate of fill was reported to be approximately 1,260 tons per day.

Based on our waste disposal projections (see section 4.3), the 130 plus-year life of Augusta’s landfill, the additional C&D capacity from the proposed Dixon Airline landfill and the ability of Augusta’s landfill to manage all non-hazardous waste generated in Augusta, the planning area has adequate capacity for the planning period. Therefore, no additional disposal capacity is warranted within Augusta.

5.4 CAPACITY ASSURANCE ASSESSMENT AND AGREEMENTS (OVER 10-YEAR PERIOD)

The Augusta ESD has provided a capacity assurance letter which affirms that it has sufficient disposal capacity to manage the solid waste in the planning area for the period covered by this plan. This landfill's capacity assurance letter can be found in Appendix 1

5.5 CONTINGENCY DISPOSAL STRATEGY

In the event of a temporary service disruption at the Augusta Deans Bridge Road Landfill, Augusta can choose to direct waste to the transfer station at Goshen Industrial Boulevard or utilize Advanced Disposal's transfer station in Columbia County. In addition, in the future, after being fully permitted, construction and demolition material could potentially also be directed to the proposed Dixon Airline C&D landfill.

Augusta's ESD leases a solid waste transfer station from Waste Management. It is currently utilized to transfer residential recycling material for final process. The facility is permitted as a solid waste transfer station and could temporarily be used to redirect waste to the Three Rivers Regional Solid Waste Authority Landfill in Jackson, South Carolina. Advanced Disposal owns and operates an Evans, Georgia transfer station in neighboring Columbia County. Waste redirected there would likely be transported for final disposal in Twiggs County, Georgia.

5.6 DISASTER MANAGEMENT – DISPOSAL STRATEGY

Augusta has an Emergency Management Agency Emergency Operations Plan (EOP) , last updated and approved 12 July 2011. The EOP describes the management and coordination of resources and personnel during periods of major emergency. Under the EOP Augusta's public works and engineering is tasked with coordination, operations and follow-through related to debris removal and disposal during an emergency or disaster. The plan list multiple designated facilities including the Augusta Deans Bridge Road Landfill. A copy the EOP can be found at :

<https://www.augustaga.gov/DocumentCenter/View/3413/Richmond-Public-Plan-2011?bidId=>



CHAPTER 6

LAND LIMITATION ELEMENT

Chapter 6 LAND LIMITATION ELEMENT

Georgia requires that municipalities “identify those sites which are not suitable for solid waste handling facilities based on environmental and land use factors” in their SWMP. Not all geographic locations are suitable or desirable for a waste management infrastructure, which may include disposal, composting, recycling, and material recovery facilities.

SWMPs play a key role in planning and managing the potential locations of waste management facilities. The Association of County Commissioners of Georgia has stated:

Outside of zoning and land-use (ordinances), a SWMP is the only planning document that has specific legal authorization to govern the siting and operation of a solid waste handling facility within a community. The state may not issue any permits, grants, or loans for any MSW disposal facility or any solid waste handling equipment or recycling equipment that is not consistent with a local SWMP. Counties wishing to manage solid waste facilities that are not permitted by the EPD may want to use their plan and local licensing or ordinances to enforce these provisions of their SWMPs.

The Georgia DNR has multiple rules which address siting limitations and criteria for siting, design, and operating requirements for solid waste handling facilities. In addition, DNR Rule 391-3-4-.05(1)(a) requires that the siting of solid waste handling facilities “must conform to all local zoning/land use ordinances.”

6.1 LOCAL PROCEDURES FOR DEMONSTRATING FACILITY CONSISTENCY WITH SOLID WASTE MANAGEMENT PLAN

No solid waste handling facility or expansion to an existing facility can be sited in Augusta without a determination that the proposed facility or expansion is consistent with the current SWMP. The procedure that Augusta and each of the local governments follow to determine whether to issue such a letter is described below.

1. At least 90 days prior to filing for a solid waste handling permit, or notifying EPD in the case of a solid waste handling facility that is permitted by rule, the owner/operator will submit to the County a written statement documenting the following:
 - How the proposed facility or facility expansion will meet the specific goals and/or needs identified in the current Solid Waste Management Plan, including a description of:
 - The impact upon the collection capability within the planning area.
 - The impact upon disposal capacity identified in the planning area.
 - The impact to the waste reduction and recycling efforts within Augusta, specifically how the proposed facility or facility expansion will contribute toward waste reduction in the planning area.

- How the proposed facility or facility expansion and its operation will impact the community. Specifically, it will address:
 - The impact to vehicle traffic and public safety around the proposed facility and throughout the planning area;
 - The impact on natural or cultural resources within the planning area.
 - The impact to the financial viability of the existing solid waste management system within the planning area, both public and private;
 - The impact to individual and business solid waste management rates.
 - The impact on the current solid waste management infrastructure within the planning area, both public and private.
 - Evidence that the proposed facility or facility expansion is sited in a location deemed suitable according to the criteria listed in this plan.
 - Evidence that the proposed facility or facility expansion is sited in an area deemed suitable location consistent with local zoning ordinances.
 - Evidence that the proper public notification was given, including notification of all adjacent property owners.
2. Within 45 days after the written statement from the owner/operator is received, Augusta Engineering Committee will make a recommendation as to whether the proposed facility or facility expansion is consistent with the SWMP. This recommendation will be documented in a letter to the governing body of the jurisdiction in which the proposed facility or facility expansion is sited. To make a determination, the Engineering Committee will conduct a process that at a minimum includes the following:
- Determine if the operation of the proposed facility or facility expansion would be consistent with regulations established by the County for privately operated waste handling and disposal facilities as provided for in County Ordinance
 - Determine the need for the proposed facility or facility expansion, based on projected remaining useful life of existing disposal facilities, will be the initial screen for any finding of consistency with this solid waste management plan. Need will be defined as less than 10 years of disposal capacity remaining, at the time that the request is submitted, in existing disposal facilities recognized in this solid waste management plan. Remaining disposal capacity will be calculated based on an engineering calculation of remaining capacity divided by the annual rate of disposal of in-County and contracted out-of-county waste at the time that the request is submitted given waste reduction programs and performance in place at that time;
 - Determine if the proposed facility or facility expansion is sited in an area deemed unsuitable according to development criteria;
 - Determine if the proposed facility or facility expansion is sited in a location that is consistent with all local zoning ordinances;

- Determine if the proposed facility or facility expansion may negatively impact other natural or cultural resources of the County;
 - Determine if the proposed facility or facility expansion would negatively impact the County's ability to contribute to the state-wide solid waste reduction;
 - Determine if proposed facility or facility expansion may negatively impact the financial viability of the County's solid waste management system
 - Hold at least one public hearing on the proposed facility to gather input regarding the consistency of the facility with the SWMP. This public hearing will be advertised according to local requirements regarding public notification of public hearings;
 - Determine if the proposed facility or facility expansion is properly insured so that closure and post-closure care is assured;
 - Determine if the proposed facility or facility expansion has a mitigation plan above and beyond financial assurance already required;
 - Evaluate the past performance of other waste handling facilities owned or operated by the applicant as a determining factor the feasibility of the new facility or facility expansion. The Committee may recommend withholding approval based on owner or operators past performance;
 - Determine if the proposed facility or facility expansion is in the best interest of public health and safety;
3. The governing body of the jurisdiction in which the proposed facility or facility expansion is sited shall review the written documentation of consistency from the owner/operator, the recommendation of the Engineering Committee, and comments received at the public hearing to determine whether the proposed facility or facility expansion is consistent with the SWMP. Within 30 days of making their determination, the governing body shall notify the facility owner/operator whether the proposed facility or facility expansion is consistent with the Plan. If the governing body of the jurisdiction determines that the proposed facility or facility expansion is consistent with the SWMP, the governing body will issue a letter of consistency.
 4. If the governing body of the jurisdiction determines that proposed facility or facility expansion is not consistent with the SWMP, the owner/operator may address the inconsistencies and resubmit their request for another review. This review will follow the process described above in Items 1 through 3.

6.2 INVENTORY AND NATURAL ENVIRONMENTAL LIMITATIONS

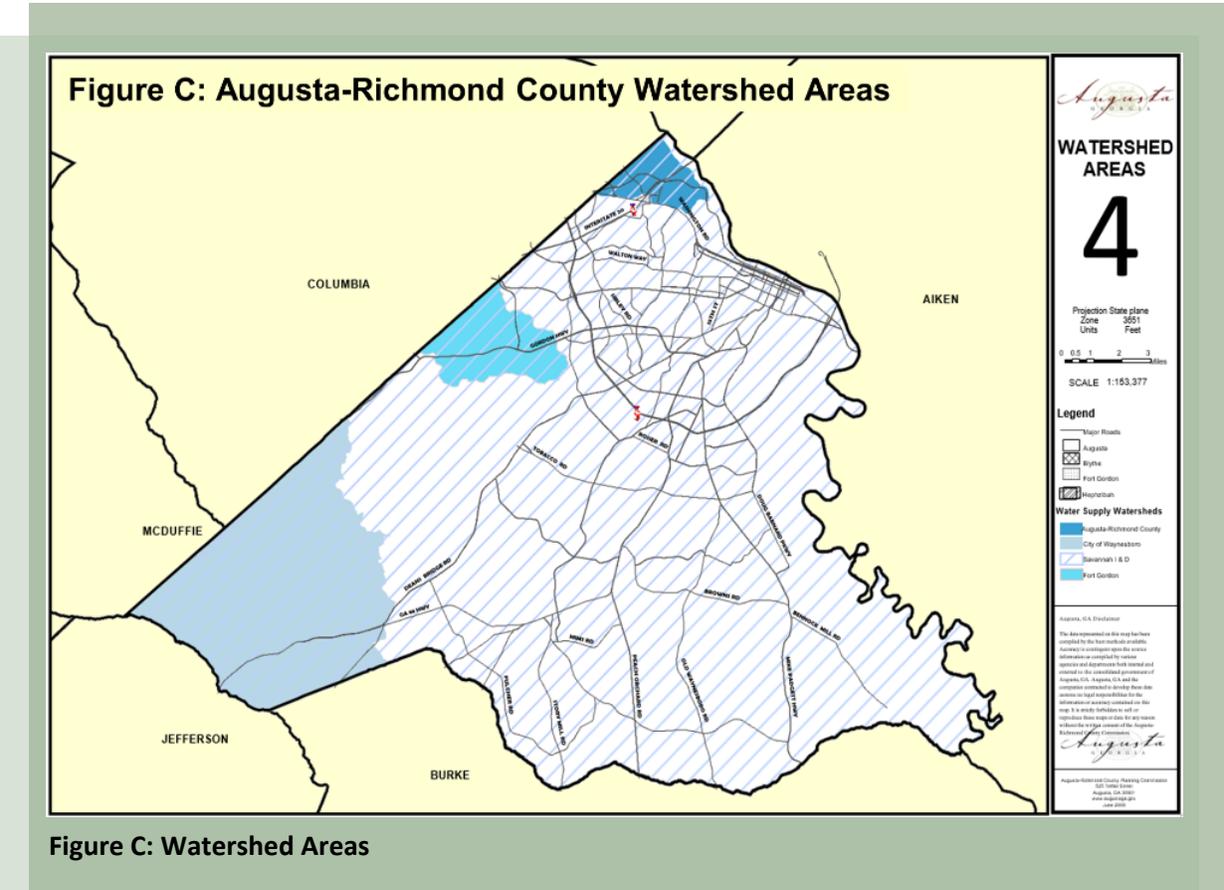
6.2.1 INVENTORY LAND AREAS

Augusta occupies a land area of 207,386 acres, or 324.04 square miles (sq. mi), with an additional 2,823 acres (4.41 sq. mi.) of water area. Augusta straddles the Fall Line, a geological boundary following the Appalachian mountain range from Alabama to New York. In Georgia and South Carolina, the Fall Line

separates the Piedmont from the Coastal Plain. The Savannah River and its tributaries drain most of Augusta.

Water Supply Watersheds

The Georgia DNR defines a water supply watershed as the area of land upstream of a governmental owned public drinking water intake. DNR has minimum criteria for both small and large watersheds. Small watersheds (<100 square miles in the drainage basin) have more stringent criteria concerning



establishment of facilities and usage of hazardous materials. All water supply watersheds in Augusta are subject to DNR’s Criteria for Water Supply Watersheds. Figure C displays Augusta’s watershed areas. Augusta has one large watershed and one small watershed. Augusta currently has several ordinances and programs in place to protect water supply watersheds from pollution and alteration.

Groundwater Recharge Areas

Groundwater recharge areas are portions of the earth’s surface where water infiltrates the ground to replenish an aquifer, which is an area of soil and rocks that stores groundwater. Recharge areas located within Augusta can be found in Figure D. The Augusta has two major aquifers: Upper Cretaceous and Basal Cretaceous. Augusta pumps most of its groundwater from the Basal Cretaceous aquifer. The recharge area for the aquifers is classified by DNR as a significant groundwater recharge area. DNR has issued regulations on groundwater recharge areas regarding solid waste landfills and hazardous waste disposal.

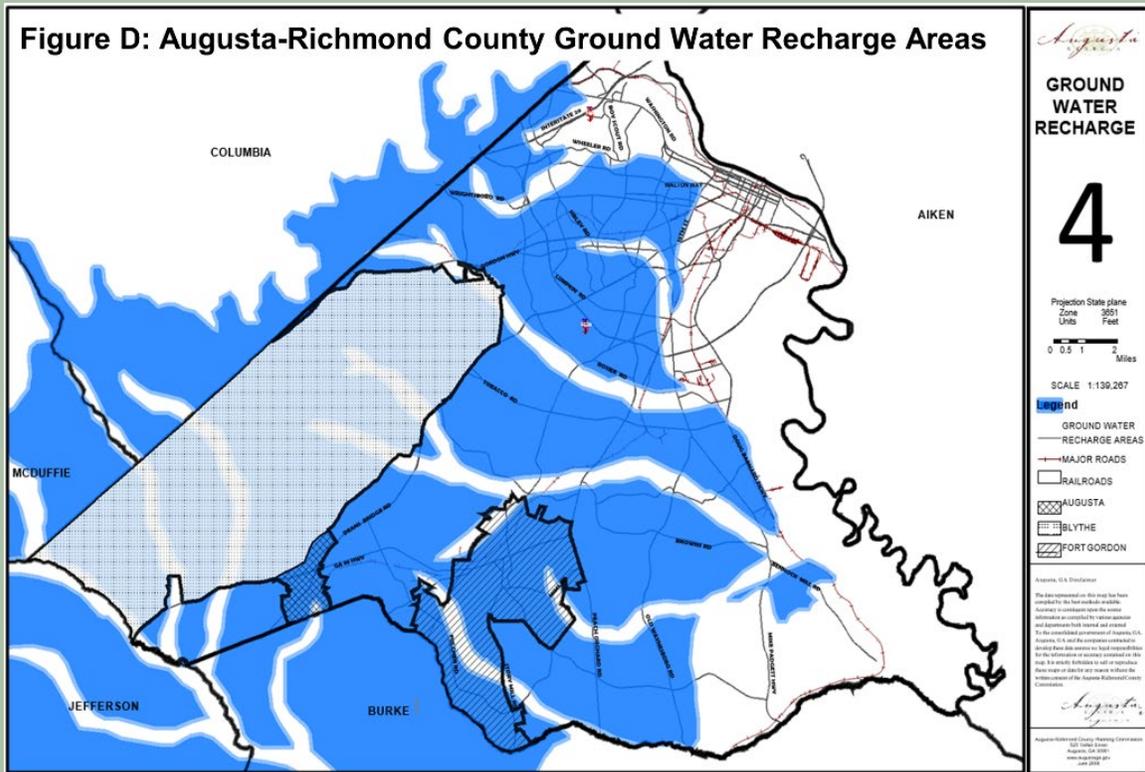


Figure D: Ground Water Recharge Areas

Wetlands

The Clean Water Act defines wetlands as areas inundated by enough water to support vegetation. Figure E depicts the wetland regions in Augusta. Wetlands in Augusta are located near the Savannah River, the Augusta Canal, and other major tributaries. Phinizy Swamp, the large Savannah River floodplain, contains the greatest concentration of wetlands. DNR has regulations on waste management within wetland regions.

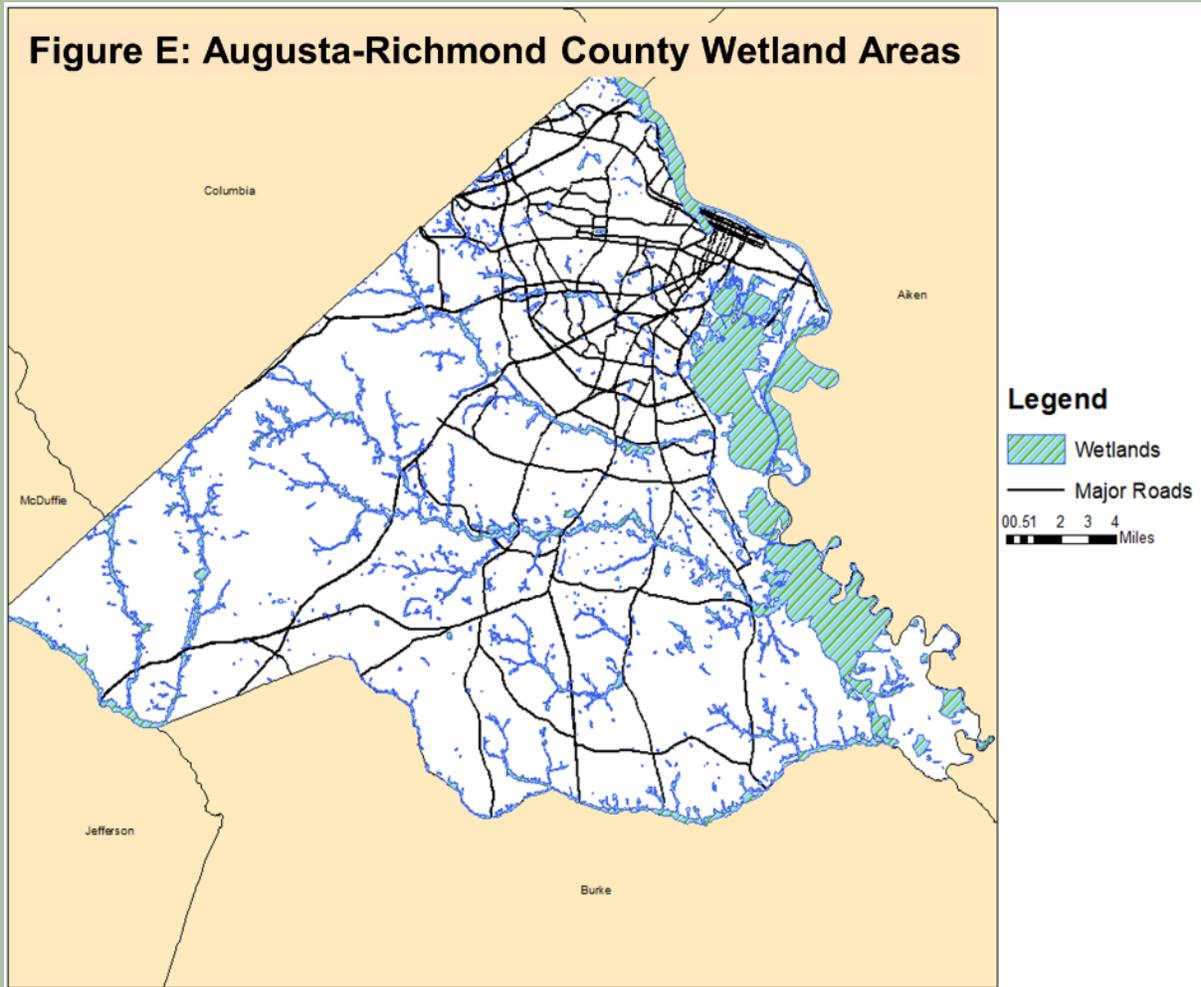


Figure E: Wetlands Areas

River Corridors

The Savannah River is protected under the Georgia Mountain and River Corridor Protection Act, which was enacted to preserve vegetation, wildlife, and water quality in the surrounding areas along the river. DNR has issued minimum criteria for river corridors to preserve their wellbeing. The Savannah River Corridor is displayed in Figure F.

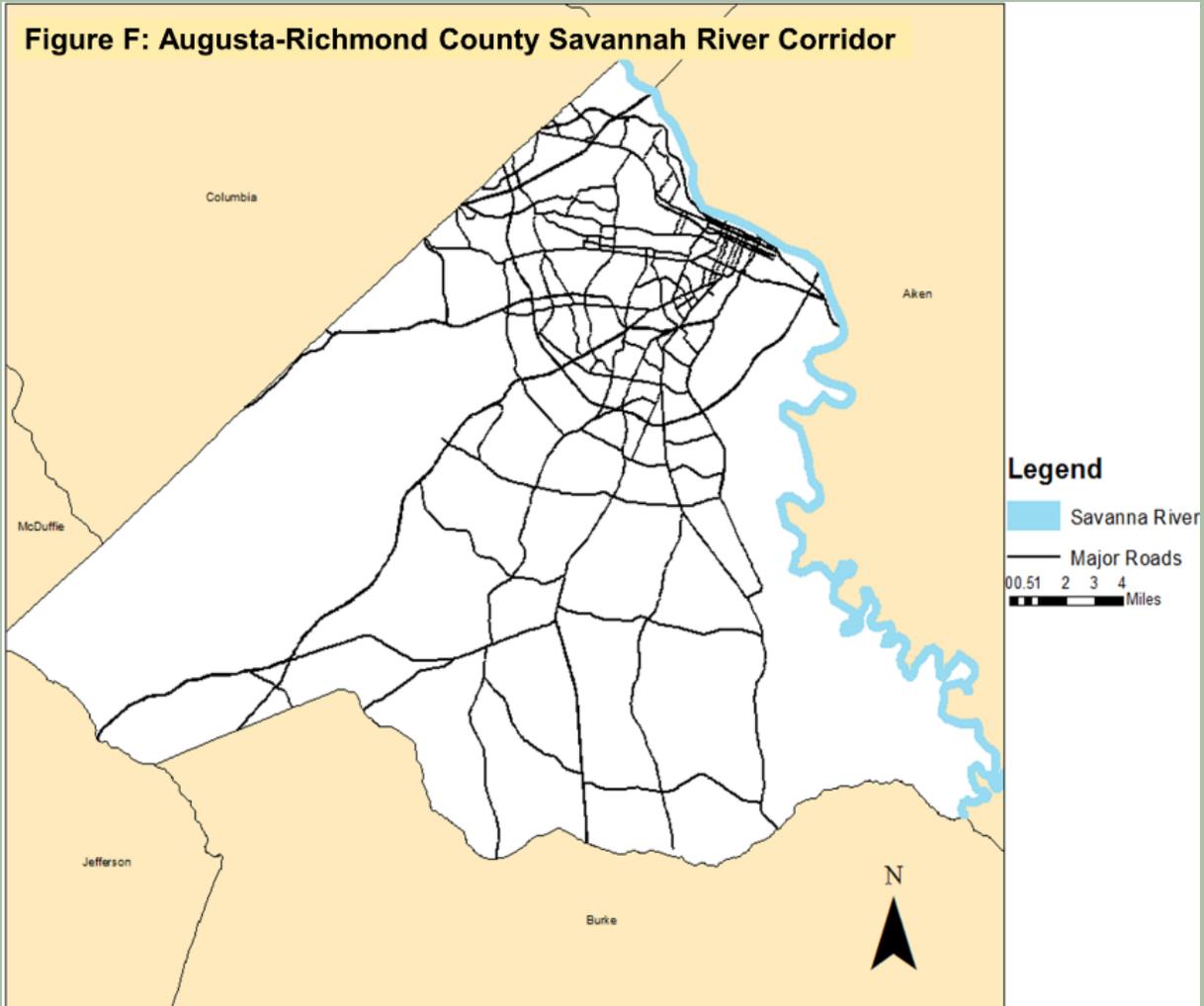


Figure F: Savannah River Corridor

Floodplains

Augusta has been involved in the National Flood Insurance Program for approximately 40 years. The Flood Damage Prevention Ordinance issued by Augusta requires a permit for extensive land use in a floodplain region. Augusta also has a Flood Hazard Mitigation Plan to outline the risks and strategies of floods in the area. Augusta’s floodplains are illustrated in Figure G.

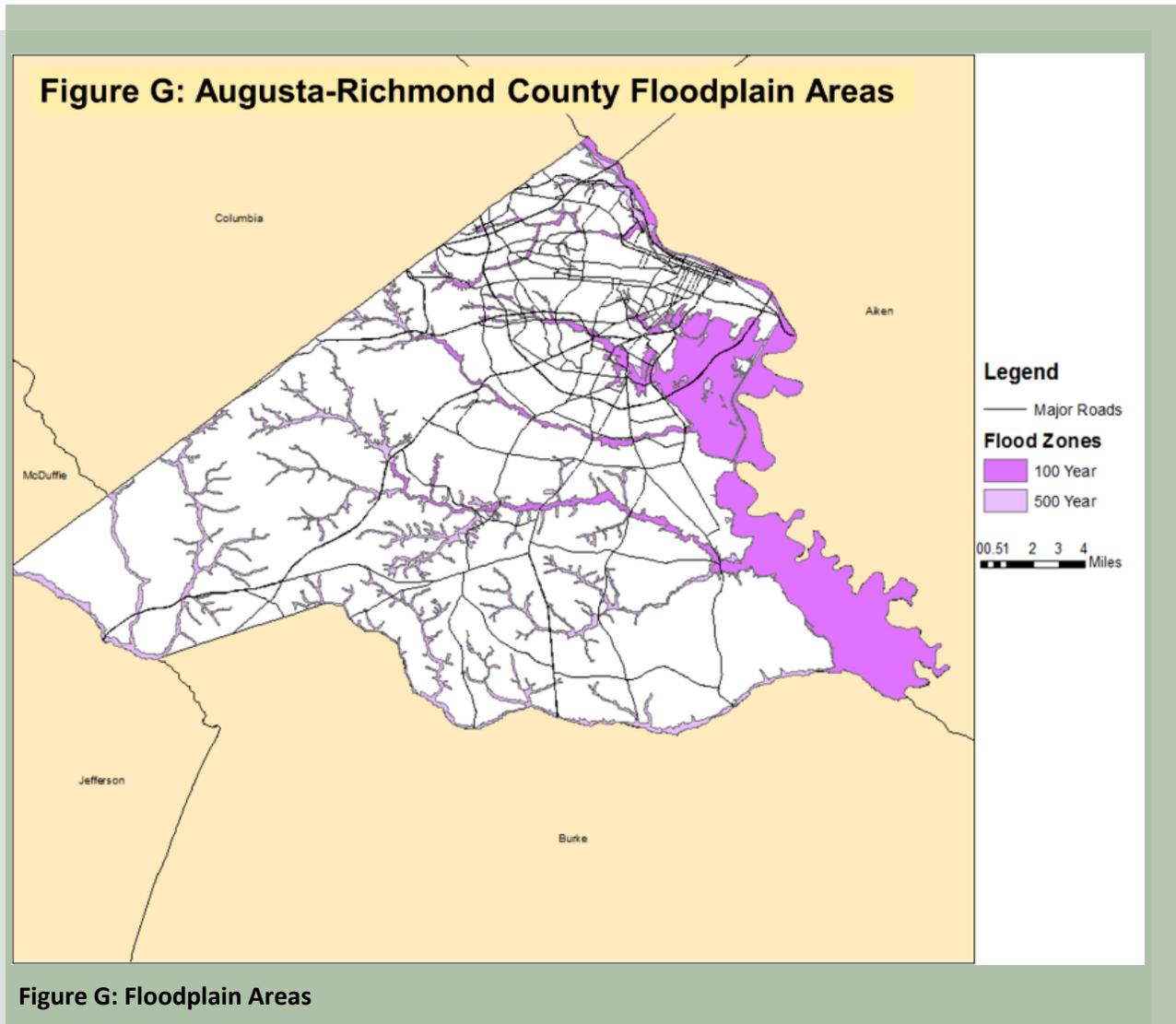
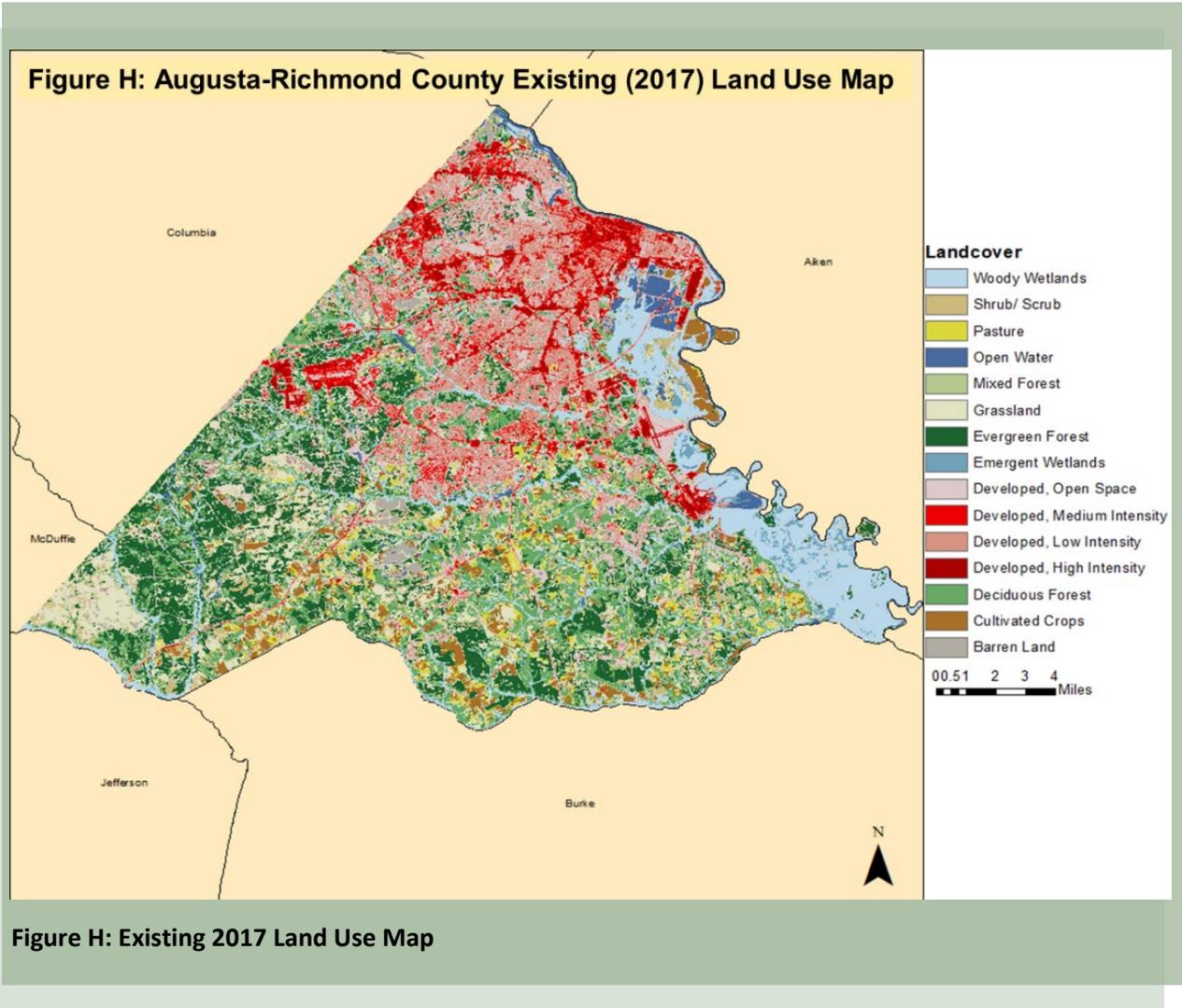


Figure G: Floodplain Areas

Local Zoning/Land Use

Zoning is the process of dividing land into specified areas for a particular use. This is often enacted and regulated by city or county authorities to guide growth and development. Figure H displays the zoning map for Augusta.



Historic Resources

There are approximately 5,800 properties located in nine districts in Augusta that are in the National Register of Historic Places, with 29 properties listed individually in the register. Augusta’s historic districts are shown in Figure I.

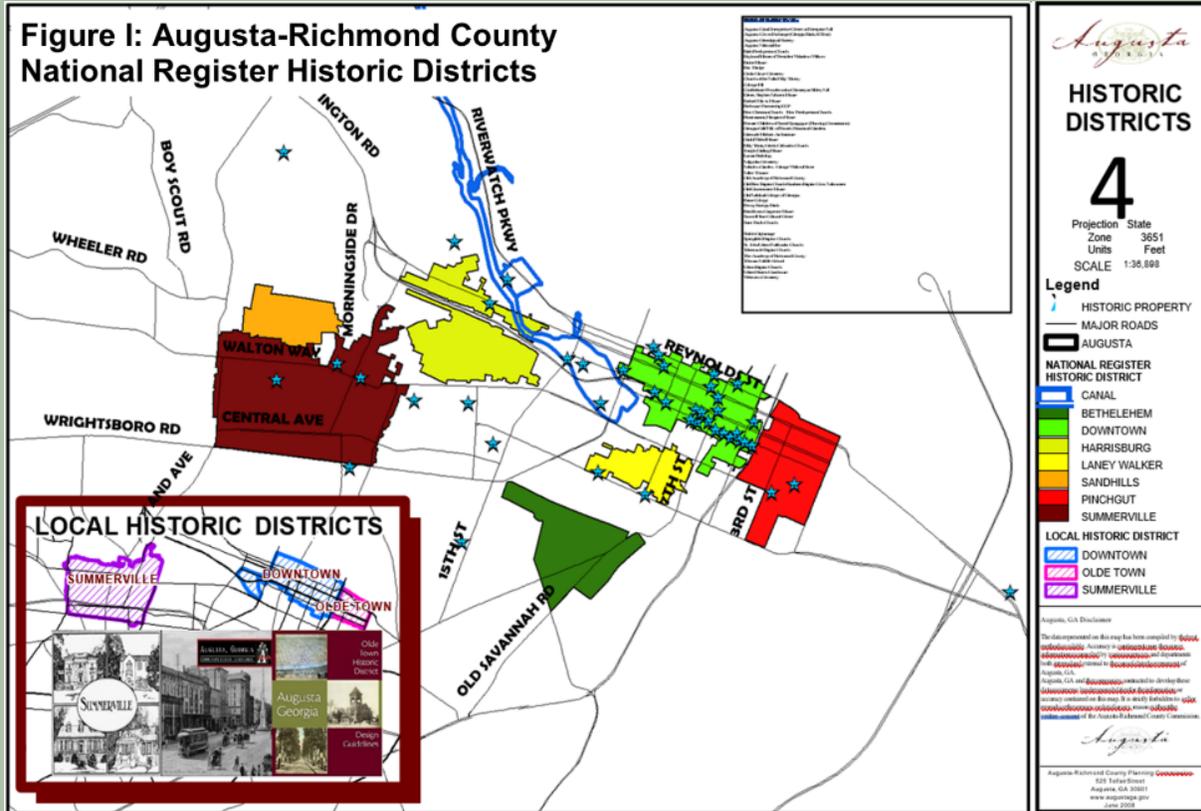


Figure I: National Register Historic District

Airport Proximity

Augusta has two airports: Augusta Regional Airport at Bush Field and Daniel Field. DNR has regulations on waste facilities and disposal near airports.

Jurisdictional Boundaries

Augusta has neighbors: Columbia and McDuffie Counties to the northwest, Burke and Jefferson Counties to the south, and Aiken County of South Carolina to the east. Criteria for waste facilities and disposal within Augusta must be consistent with those in neighboring jurisdictions.

Access

The access and availability provided by the highway system in Augusta allows for a simpler siting process for potential solid waste handling facilities.

6.2.2 NATURAL ENVIRONMENTAL LIMITATIONS

Water Supply Watersheds

According to the Georgia DNR Rule 393-3-16-.01(7)(c)1, new solid waste landfills must have synthetic liners and leachate collection systems at all locations within a small water supply watershed.

Groundwater Recharge Areas

DNR Rule 393-3-16-.02(3)(a) issues that in significant groundwater recharge areas, DNR shall not issue permits for new solid waste landfills that do not have synthetic liners and leachate collection systems.

Wetlands

DNR Rule 393-3-16-.03(3)(e) establishes that solid waste landfills are considered an unacceptable use of a wetland.

River Corridors

DNR Rule 393-3-16-.04(4)(h) prohibits the development of new solid waste landfills within protected river corridors.

Protected Mountains

DNR Rule 393-3-16-.05(4)(l) prohibits the development of new solid waste landfills in areas designated as protected mountains. No protected mountains are present in the planning area.

6.3 REVIEW OF DECISION-MAKING PROCESS FOR NEW WASTE HANDLING FACILITIES (CRITERIA FOR SITING)

6.3.1 CRITERIA FOR SITING

Chapter 391-3-4-.05 of the Georgia DNR's EPD relates specifically to the siting criteria for solid waste management facilities. The following items are criteria for siting solid waste facilities under DNR Rules.

Zoning

DNR Rule 391-3-4-.05(1)(a) requires that the site conform to all local zoning/land use ordinances. Written verification that demonstrates compliance must be submitted to the EPD.

Airport Safety

DNR Rule 391-3-4-.05(1)(c) requires that new solid waste landfill units or lateral expansions of existing units shall not be located within 10,000 feet of any public- or private-use airport runway used by turbojet aircraft or within 5,000 feet of any public- or private-use airport runway used by only piston-type aircraft. Owners or operators proposing to site new solid waste landfill units and lateral expansions within a five-mile radius of any public- or private-use airport runway end used by turbojet or piston-type aircraft must notify the affected airport and the Federal Aviation Administration.

Floodplains

DNR Rule 391-3-4-.05(1)(d) states that any solid waste management facility located in the 100-year floodplain shall not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in a washout of solid waste that poses as a hazard to human health and the environment.

Wetlands

DNR Rule 391-3-4-.05(1)(e) prohibits the development of new solid waste management facilities in wetlands as defined by the U.S. Corps. of Engineers unless evidence is provided to EPD by the applicant that the use of such wetlands has been permitted or otherwise authorized under all other applicable state and federal laws and rules.

Fault Areas

DNR Rule 391-3-4-.05(1)(f) requires that new solid waste landfill units or lateral expansions of existing units shall not be located within 200 feet of a fault that has had displacement in the Holocene Epoch unless the owner or operator demonstrates to the EPD that an alternative setback distance of less than 200 feet will prevent damage to the structural integrity of the landfill unit and will be protective of human health and the environment.

Seismic Impact Zones

DNR Rule 391-3-4-.05(1)(g) prohibits the development of new solid waste management facilities in seismic impact zones unless the owner or operator demonstrates to EPD that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.

Unstable Areas

DNR Rule 391-3-4-.05(1)(h) requires owners or operators of new landfill units, existing landfill units, and lateral expansions located in an unstable area to demonstrate that engineering measures have been incorporated into the landfill unit's design to ensure that the integrity of the landfill unit's structural components will not be disrupted.

Significant Groundwater Recharge Areas

DNR Ruel 391-3-4-.05(1)(i) dictates that any new solid waste landfill or lateral expansion of an existing solid waste landfill located within two miles of a significant groundwater recharge area must have a liner and leachate collection system and that no regional landfill that accepts solid waste generated outside of the county in which it is located can exist, even partially, within a significant groundwater recharge area.

6.3.2 OTHER CONSIDERATIONS

Permitting

Solid Waste Management in Georgia complies with Chapter 391-3-4 of the Georgia EPD. DNR Rule 391-3-4-.05(1)(b) requires that whenever any applicant begins a process to select a site for a solid waste disposal facility, documentation demonstrating compliance with O.C.G.A. § 12-8-26(a) be submitted to the EPD; further, whenever any applicant takes action resulting in a publicly- or privately-owned solid waste disposal facility siting decision, documentation demonstrating compliance with O.C.G.A. § 12-8-26(b) be submitted to the EPD.

Upon site selection, the applicant must conduct a Hydrogeological Assessment in accordance with DNR Rule 391-3-4-.05(1)(j). Preparation of the land limitation element of a SWMP should comply with the Solid Waste Management Act and Chapter 391-3-4 of the DNR Rules. If an applicant undertakes the Facilities Issues Negotiation Process pursuant to a facility siting decision, the process will be undertaken in accordance with O.C.G.A. § 12-8-32 and any guidelines issued by the department pursuant to state law.

Commercial Industrial Waste Landfills

According to DNR Rule 391-3-4-.05(3), commercial industrial waste landfills must meet the same siting criteria as MSW landfills.

Military Airspace

DNR Rule 391-3-4-.05(1)(k) prohibits the development of new solid waste landfill units within two miles of a federally restricted military air space that is used as a bombing range.

Buffer Zones

DNR Rule 391-3-4-.07(1)(b) requires all solid waste landfill units to provide a minimum 200-foot buffer between the waste disposal boundary and the property line as well as a minimum 500-foot buffer between the waste disposal boundary and any occupied dwelling and the dwelling's water supply well.

6.4 UPDATED STATEMENT OF NEEDS AND GOALS REGARDING LAND LIMITATION

Based on existing facilities' capacities and lifespans, no new solid waste disposal facilities or transfer stations will be necessary for compliance with the 10-year disposal capacity requirement.

The goal of this land limitation element is to:

- Ensure that existing solid waste handling facilities are compatible with surrounding areas and abide by current Georgia EPD rules.
- Ensure that new solid waste handling facilities are placed in suitable areas, abide by current Georgia EPD rules, and are approved for development within Augusta.

6.5 REVIEW AND ADEQUACY OF PROCESSES AND PROCEDURES TO DETERMINE CONSISTENCY OF PROPOSED FACILITIES WITH SWMP

6.5.1 ALL SOLID WASTE FACILITIES

Any facility requesting renewal, modification, or issuance of a solid waste handling permit from the EPD must demonstrate that they are consistent with Augusta's SWMP. Chapter 391-3-4-.05 of the Georgia DNR EPD rules specifies siting criteria associated with landfills and solid waste transfer facilities.

6.5.2 PRIVATELY-OWNED SOLID WASTE HANDLING AND DISPOSAL FACILITIES

All privately-owned solid waste handling and disposal facilities requesting a renewal, modification, or issuance of a permit from EPD or Augusta must demonstrate that the facility or facility expansion is consistent with Augusta's SWMP. In addition to any criteria set forth under DNR's regulations, Augusta will also use the following criteria to determine whether the issuance of the requested permit is consistent with the SWMP:

- A determination has been made by Augusta that operation of the proposed facility or facility expansion would be consistent with regulations established by Augusta for privately operated waste handling and disposal facilities as provided for in the Augusta Ordinance.
- A determination has been made by Augusta that there is a need for the proposed facility or facility expansion, based on projected remaining useful life of existing disposal facilities, will be the initial screen for any finding of consistency with this SWMP. Need will be defined as less than 10 years of disposal capacity remaining in existing disposal facilities recognized in this SWMP at the time that the request is submitted. Remaining disposal capacity will be calculated based on an engineering calculation of remaining capacity divided by the annual rate of disposal of in-county and out-of-county waste at the time that the request is submitted and considering waste reduction programs and performance in place at that time.

- A determination has been made by Augusta that the proposed facility or facility expansion is not sited in an area deemed unsuitable according to development criteria (examples include, but are not limited to: in groundwater recharge areas; located within two miles of a municipal water supply; on soils poorly suited for development; on slopes of greater than 25 percent; in areas that do not have easy accessibility to transportation networks; on urban or built up lands; on or around water bodies or wetlands; or on federal, state, or public lands).
- A determination has been made by Augusta that the proposed facility or facility expansion is sited in a location that is consistent with all local zoning ordinances.
- A determination has been made by Augusta that the proposed facility or facility expansion does not negatively impact other natural or cultural resources of Augusta.
- A determination has been made by Augusta that the proposed facility or facility expansion does not negatively impact the current solid waste management infrastructure of Augusta.
- A determination has been made by Augusta that the proposed facility or facility expansion does not negatively impact collection capability and/or disposal capacity identified in the SWMP.
- A determination has been made by Augusta that the proposed facility or facility expansion does not negatively impact Augusta's ability to contribute to state-wide solid waste reduction.
- A determination has been made by Augusta that the proposed facility or facility expansion does not negatively impact the financial viability of the Augusta's solid waste management system.
- A determination has been made by Augusta that the proposed facility or facility expansion is properly insured so that closure and post-closure care are assured.
- A determination has been made by Augusta that the proposed facility or facility expansion has a mitigation plan above and beyond financial assurance already required.
- A determination has been made by Augusta that the past performance of other waste handling facilities owned or operated by the applicant will be used in determining the feasibility of the new facility or facility expansion. Augusta may withhold approval based on such past performance.
- A determination has been made by Augusta that the proposed facility or facility expansion is in the best interest of public health and safety.

No proposed privately-owned facility or facility expansion will be sited without a letter from the Augusta Administrator and the City Councils of Blythe and Hephzibah (if said facility is within their city limits) stating that the facility is consistent with the SWMP. The Augusta Commission and the City Councils of Blythe and Hephzibah may hold one or more public hearings to gather input to make this determination for their respective jurisdictions.

Should a determination be made by the Administrator that one or more public hearings shall be held, then the applicants of proposed facilities or facility expansions shall consult with Augusta and its Augusta officials (if said facility is within Augusta) to identify an appropriate date to schedule a public hearing. The applicant shall advertise the public hearing in the local newspaper and distribute letters of intent to adjacent property owners no less than 15 days prior to the date of the scheduled hearing. Should the Commission and Council (if said facility is within their city limits), based on information provided, disapprove of the proposal based on inconsistency with the adopted SWMP, the applicant may appeal and provide additional information at a subsequent Commission and Council (if said facility is within their



city limits) meeting. Applicants may appeal any additional negative ruling by the Commission and Council (if said facility is within their city limits) to circuit court.



CHAPTER 7

EDUCATION AND PUBLIC OUTREACH

Chapter 7 EDUCATION AND PUBLIC OUTREACH

Augusta is dedicated to public-sector programs and public outreach to encourage good solid waste management practices that are targeted to reduce waste, increase recycling, and preventing litter.

Augusta uses a variety of mechanisms to distribute information to residents and businesses regarding proper recycling and waste management, including the following:

- **Augusta Website:** ESD has useful information on its webpage regarding its recycling and solid waste programs. Links are provided to flyers, cleanup program forms, the Waste Wizard, and an Augusta Environmental Services survey. The Waste Wizard is a search engine that provides guidance on how to recycle and safely dispose of materials.
- **Collection Vehicle Wraps:** The residential collection contractors are required to provide trucks that have been wrapped with messaging that promotes recycling awareness and participation.
- **Keep Augusta Beautiful (KAUGB):** This is a program approved by the Augusta Commission in September 2017, and launched in 2018, with a mission to educate, engage, and coordinate public awareness of litter prevention, proper recycling, and beautification of Augusta.
- **School Education Programs:** Field trips as well as in-classroom programs are available.
- **Speakers Bureau:** Two ESD staff members and a dedicated Code Enforcement Officer are available to conduct workshops, presentations, and landfill tours for civic organizations, residents, schools, and businesses.
- **Special Events:** Special events are held on Earth Day and America Recycles Day to stimulate environmental awareness and promote sustainable living initiatives. They are free to the public.
- **A 311 hotline:** ESD has dedicated resources to answer questions and field calls on collection and recycling related service issues.

7.1 INVENTORY OF EDUCATION AND PUBLIC OUTREACH

7.1.1 EDUCATION PROGRAMS AND EVENTS

As a partner and service provider to the community, Augusta strives offer a variety of community-focused programs and events to benefit its citizens. Augusta offers the following programs, events, and information:

- **Neighborhood Cleanup Program** - Augusta Environmental Services has a program that will help Augusta residents keep their neighborhoods clean year-round. The program gives a small group of residents access to a dumpster in their area for a weekend to clean their neighborhood. This is a free service if the rules and regulations are followed.
- **Volunteer Litter Cleanup Program** - This program provides supplies to groups, clubs, and other organizations (of 2 -20 volunteers) that organize litter cleanups. Supplies include sticks, gloves, and bags.

- **Event Recycling Program** - Augusta has an established recycling bin loan program that is available to support the hundreds of events (e.g., fairs, festivals, block parties) held in the community each year. Bins are provided at no cost to event organizers to allow on-site collection of aluminum, plastic, and paper recyclables.
- **Civic Group Tire Collection Program** - Augusta ESD offers this program to civic and non-profit groups that want to collect tires from public rights-of-way or illegal dump sites within Augusta. The program includes planning support and financial incentives in the form of \$2.00 per passenger vehicle tire that is collected and brought to the landfill.
- **School Education Programs** - Augusta ESD offer field trips to the landfill facility and in-classroom programs. The ESD works with other Augusta organizations as well as the educators at Phinizy Swamp (Center for Water Sciences, a 1,100-acre nature park) to provide a program for each grade level and curriculum.
- **TreeCycle your Christmas Tree** - After the Christmas holiday and into the month of January, Augusta collects Christmas trees at the curb, free of charge, for residents who participate in the garbage collection program. Live trees must have no decorations and should be placed at the curb. Fake trees must also have no decorations; these will be collected as bulky waste. [See flyer here.](#)
- **Household Waste** – To safely and properly dispose of household waste items, such as old can paints, or a bottle of insecticide, Augusta ESD provides proper disposal instructions to residents and customers. For more information, [see flyer here.](#)
- **Composting** – Augusta ESD provides residents with compost bins to save space in landfills, improve soil quality naturally, and help conserve natural resources. For more information on how to properly start composting, [see flyer here.](#)
- **Grasscycling** – Grasscycling is a natural way of recycling grass clippings. This helps reduce the amount of yard waste collected by Augusta ESD, as well as provides the lawn with nutrients it needs, and does not cause thatch buildup. For more information, [see flyer here.](#)
- **Needle Disposal** - Needles, syringes, lancets, and other “sharps” are considered to be special care items and can be harmful to those collecting your garbage. For more information, refer to [this flyer](#) for disposal guidelines.
- **Scrap Tire Recycling Events** - Augusta ESD holds free quarterly scrap tire recycling events for residents at the Landfill. A few basic rules: 1) each customer must provide proof of Augusta residency; 2) tires are not accepted from tire businesses or commercial customers; 3) tires may be on or off the rim; 4) please be prepared to unload your vehicle. In addition, the ESD assists residents working with Augusta Code Enforcement or the Augusta Marshal’s Office to do one-time cleanup events on their residential property due to excessive tire piles.

7.1.2 ONLINE EDUCATION

Augusta’s ESD maintains an online presence to provide information and education on a range of topics. These topics include available services, calendars and schedules, instructions for recycling specific items, and care of a recycling or garbage carts, among others. The topics can be accessed at: <https://www.augustaga.gov/2613/Environmental-Services>

Below in Figure 7-1 is the menu of online information and tools available to users.

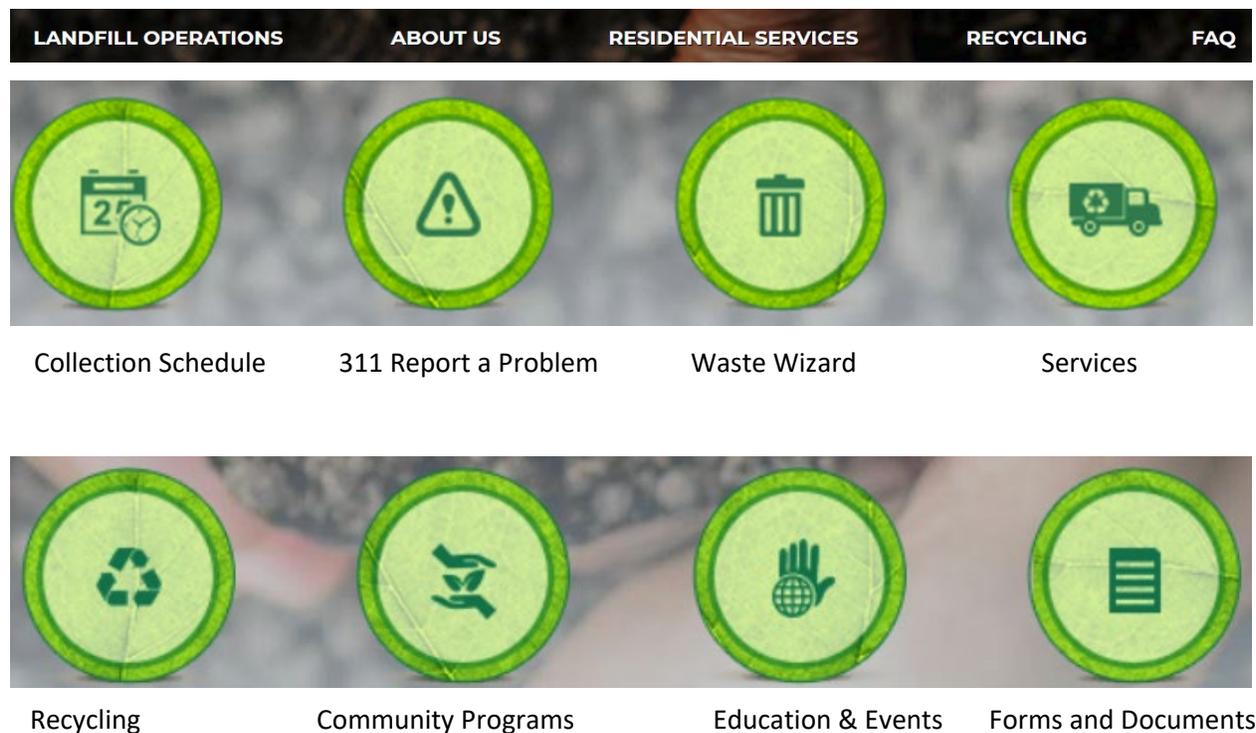


Figure 7-1: ESD Online Menu

Augusta’s has an online tool call **Waste-Wizard** provides users the ability to quickly lookup up proper recycling or disposal method for a wide range of materials. This tool can be accessed at: <https://www.augustaga.gov/2325/Waste-Wizard>. Figure 7-2 shows the Waste-Wizard user interface.

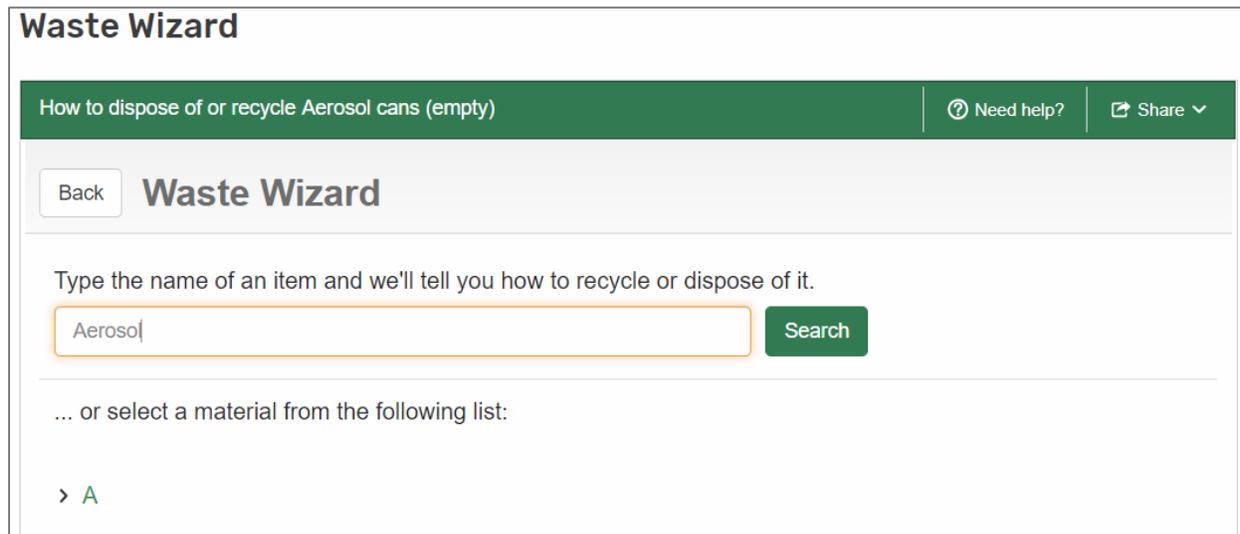
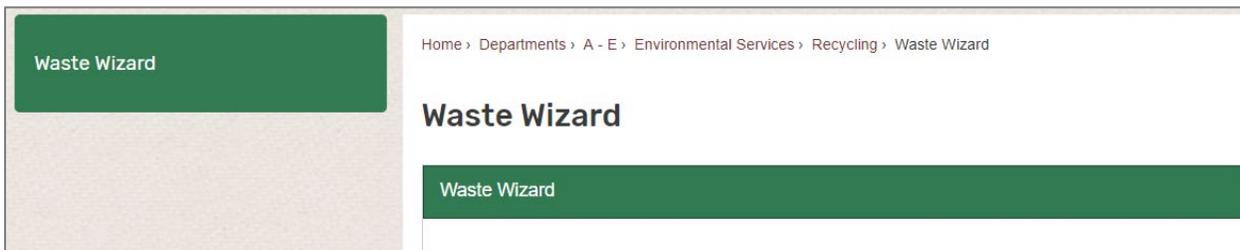


Figure 7-2: Augusta’s Online Waste-Wizard Interface

7.1.3 Keep Augusta Beautiful (KAUGB)

Augusta launched its KAUGB program in 2018 with a goal “to Educate, Engage, and Coordinate public awareness on litter prevention, proper recycling, and beautification of Augusta.” By providing resources, information, and support to residents of Augusta, KAUGB consistently seeks to serves its purpose of keeping Augusta beautiful. KAUGB’s projects include litter pickups, waterway cleanups, and recycling events, and its program manager is Edkesha Anderson.

KAUGB hopes to reduce littering throughout Augusta by providing residents with the tools and education that they need to recycle and dispose of materials responsibly. KAUGB’s website serves as a resource where residents can find information about community events, cleanups, and ongoing beautification efforts. KAUGB also provides guidance and assistance to citizens of Augusta who want to host cleanup events in their areas.

The objectives of KAUGB are to reduce litter by 5-10% annually, increase responsible recycling and decrease recycling contamination by 5% annually, and promote and provide beautification efforts county-wide. In order to meet these goals, KAUGB will function as a centralized location where residents can contact community partners and volunteers; find and submit applications for KAUGB and Environmental Services programs, and access information regarding workshops and events.



KAUGB is currently working through the process of becoming an affiliate of Keep America Beautiful (KAB), a national initiative with similar goals to KAUGB. Through this affiliation, KAB would provide KAUGB with additional resources and funding as well as the credibility of affiliating with a national program. Read more about the affiliation process here: <https://www.augustaga.gov/2654/Affiliation-Process>.

KAUGB support multiple events and programs. These include:

- The Great American Clean Up, a free residential recycling event targeted at cleaning up residential properties
- Adopt a Spot Program which provides supplies and services to support citizens groups efforts to perform cleanup events for adopted locations
- Composting and recycling education class partnerships to assist in teaching classes across all levels of education (e.g., elementary, middle, and high school and adults).
- 2019 Earth Day Augusta, the sixth annual event, which promotes environmental education and local vendors in a fun atmosphere which includes live entertainment.

7.2 ASSESSMENT OF EDUCATION AND PUBLIC OUTREACH

A clear and effective E&PO campaign is an ongoing and integral part of any successful waste reduction and recycling program. Developing and implementing such a campaign to address the low participation and high contamination rates that are undermining the residential recycling program should be a top priority. The estimated residential recycling participation rate of 30% indicates that some single-family residents might not realize that they are already paying for residential recycling collection as part of their garbage collection service. Also, many multi-family living units do not offer recycling for their tenants.



Key elements in developing an effective education and outreach campaign include the following:

- **Understanding Your Target Audience:** This is fundamental to developing messages that resonate with your audience and have the potential to bring about behavior change. It also helps you to identify the communication outlets (e.g., internet, social media, radio, print, etc.) most likely to reach your target audience.
- **Rebranding:** ESD’s motto “Cleaner. Greener. Smarter,” is a good slogan for the overall system, but a more specific brand could be created for the waste reduction and recycling program.
- **Easy Navigation between Web Pages:** Augusta’s recycling webpage is a good source of information but is limited. Environmental benefits and the importance of recycling can be integrated to enhance the message. Ultimately, the goal should be for Augusta’s recycling webpage to be dynamic and regularly modified to provide new messages and resources. Most importantly, the site should showcase the ongoing efforts of ESD staff to increase recycling.

Augusta’s main website (augustaga.gov) should allow residents to find recycling information easily. Currently, if someone wants recycling information, they must know to look under Environmental

Services in the department listing, which is not necessarily intuitive.

- Keep Augusta Beautiful (KAUGB) is a new community engagement initiative whose mission and objectives include

promoting recycling and decreasing recycling contamination. However, KAUGB’s webpage is not easy to find, currently located under the Living Here tab of Augusta’s main website.



- Changes to the department's directory and search function and the addition of logos that link to the above webpages would be simple ways to improve navigation to recycling information.
- **Social Media:** Facebook, Instagram, and Twitter offer venues for Augusta to reach its audience on a regular basis. Augusta Solid Waste does have Facebook, Instagram, and Twitter accounts, but the content is very limited. The latest posts on Facebook and Twitter are from September 2017, and Instagram only has three posts from April 2016.
 - A well-run Facebook page can generate interest in Augusta's programs. Linking the page to Augusta's website and including the page on printed literature will help garner a Facebook audience. However, maintaining consistent activity on social media can be time consuming, and it will be difficult to maintain a social media presence without a Recycling Program Coordinator. An interim measure may be to fund a summer internship for a local college student with social media skills.
- **Printed Materials:** While social media provides a useful outlet for reaching more individuals, marketing specialists caution not to abandon the printed word. Some individuals prefer to receive information about recycling in mailings or their utility bill inserts. Residents might keep a bill insert or magnet that includes the collection day and an infographic of accepted recyclables on their refrigerator to reference. Other types of printed materials include brochures, newsletters, postcards, news articles, media releases, cart labels, and truck wraps.
- **Messaging:** Effective programs need to communicate with both those who recycle and those who do not. For those who recycle, the focus is less promotional and more instructional (i.e., where, when, and what to recycle and, more specifically, how to recycle correctly). When communicating with non-recyclers, you are trying to bring about a behavior change, which requires more creativity. Various studies have shown that positive messages focusing on the gains made through recycling are more effective than guilt-based approaches.



CHAPTER 8

GOALS AND STRATEGIES

Chapter 8 GOALS AND STRATEGIES

In this section, Augusta's goals for each of the five planning elements are described along with strategies to achieve those goals.

8.1 WASTE REDUCTION ELEMENT

Waste reduction includes any activity that results in waste being diverted from the landfill. This can include recycling, material reuse, waste reduction as well as waste conversion activities.

Augusta has established two primary waste reduction goals for the planning period:

- Increase the yield of recyclable material from residential curbside and downtown collection by 3 to 5% per year over the planning period.
- Improve data collection and reporting of diversion ability.
- Facilitate expansion of recycling of construction and demolition material within the planning area.

Augusta will pursue four primary strategies to achieve these goals:

- Implementation of multiple grassroots projects through KAUGB and the Environmental Services Department. Utilizing targeted education and incentives approach, projects will be developed to reduce residential recycling contamination (trash placed in rates from the current 50 plus percent to 15 percent over the planning period.
- Implement new scale house and recycling reporting software.
- Introduce, test, and implement a new downtown program, such as a localized compactor program, which will provide additional recycling options for businesses and residence which are currently part of or opt into the ESD program.
- Facilitate development of additional recycling capacity in the planning area by including the proposed Dixon Airline C&D landfill to this plan update.
-

8.2 COLLECTION ELEMENT

Waste collection activities include managing programs to provide curbside residential and downtown collection services while also promoting the consistent and universal service access for business and industry throughout the planning area.

Augusta has two primary waste collection goals:

- Continued reliable and high-quality collection services, as measured by missed services and survey results, to the approximately 65,000 plus residential and small businesses which are part of or have opted into Augusta’s program.
- Provide additional collection options to address the changing needs of the downtown area including, level of service, aesthetics, and cost.

Augusta will pursue two primary strategies to achieve these goals:

- Continued utilization of the collection contractor model and utilization of software solutions for monitoring, data capture, and quality assurance of service.
- Introduce, test and implement new downtown collection programs, such as localized compactor program.

8.3 DISPOSAL ELEMENT

This section addresses the state requirement that MSW plans provide for the availability of 10 years disposal capacity for the planning unit.

Augusta has two primary disposal goals:

- Ensure Augusta has sufficient available disposal capacity to handle all solid waste generated in the planning area over the 10-year planning period, which is managed to meet or exceeds environmental regulations.
- Reduction of litter and illegal waste and tire dumping.

Augusta will pursue three primary strategies to achieve these goals:

- Systematic planning, development and management of Augusta’s Landfill.
- Programs to reduce illegal disposal including litter and tire piles.
- Facilitate development of additional C&D disposal and recycling capacity in the planning area by including the proposed Dixon Airline C&D landfill to this plan update.

8.4 LAND LIMITATION ELEMENT

Georgia requires that municipalities “identify those sites which are not suitable for solid waste handling facilities based on environmental and land use factors” in their Solid Waste Management Plan.

Augusta’s land limitation goals include:

- Ensure that all solid waste handling facilities are consistent with environmental and land use limitations.
- Ensure solid waste handling facilities are consistent with this Solid Waste Management Plan

Augusta will pursue two primary strategies to achieve these goals:

- Review and monitor current and proposed solid waste handling facilities for compliance and consistency.
- Require all solid waste facilities follow the defined process for demonstrating consistency with this Plan.

8.5 PUBLIC EDUCATION AND OUTREACH ELEMENT

Augusta has three Public Education and Outreach Goals:

- Ensure that all residents and businesses have access to information on waste reduction and waste management in the planning area.
- Educate residential customers on acceptable curbside recycling.
- Seek regular feedback from residential and business customers collection customers on service satisfaction.

Augusta will pursue three primary strategies to achieve these goals:

- Continue to fund and manage education programs and information platforms and social media;
- Support the growth of the KAUGB program; and
- Annual customer satisfaction surveys.



APPENDIX 1
LANDFILL CAPACITY ASSURANCE LETTER

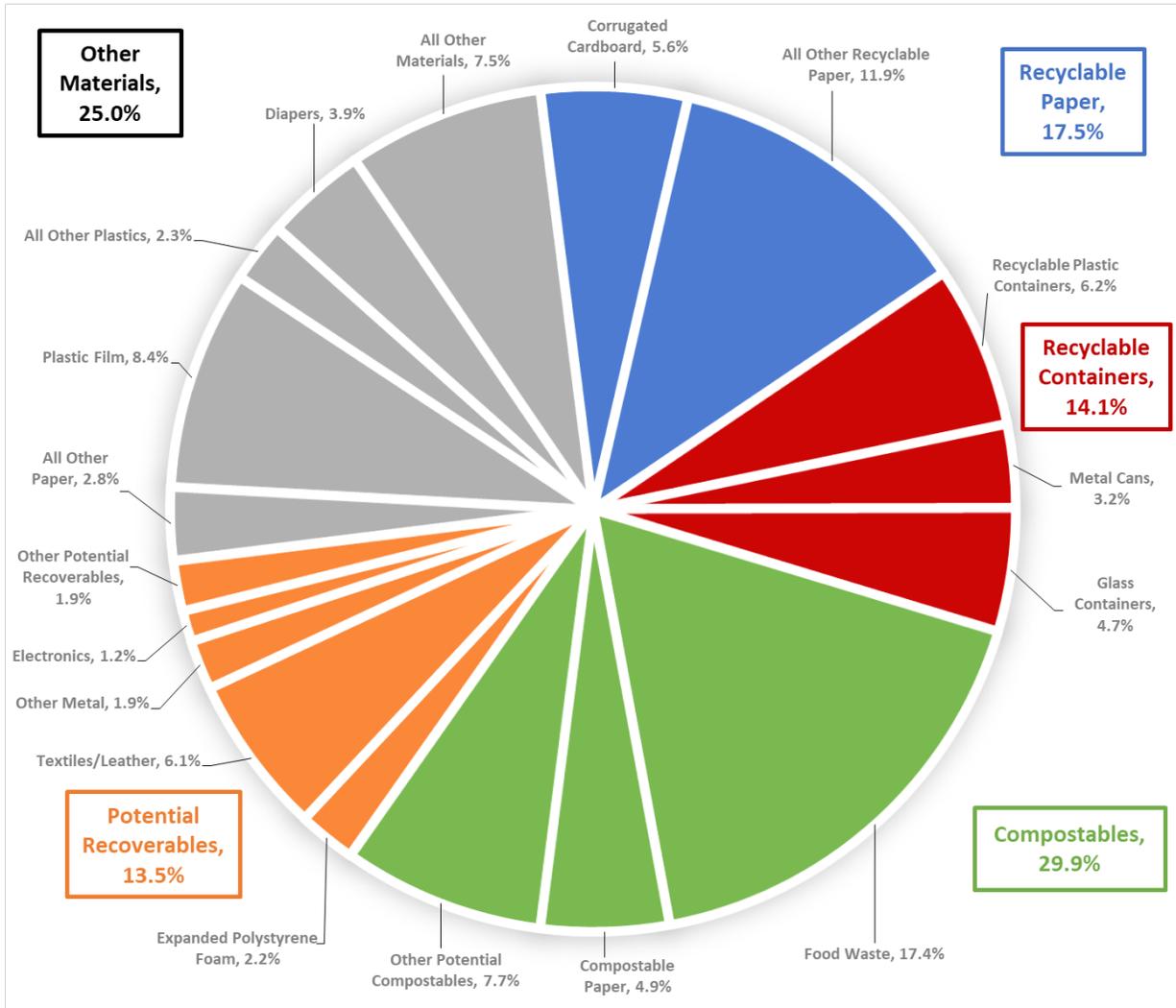


**APPENDIX 2
WASTE COMPOSTION STUDY DATA**

Table 2-8: Composition of Residential Waste Disposed (% by weight)

Material Categories	Weighted Avg.	90% Confidence Interval	
		Lower Bounds	Upper Bounds
Newspaper	1.6%	0.8%	2.3%
Corrugated Cardboard (OCC)	5.6%	4.0%	7.2%
Office Paper	1.1%	0.2%	1.9%
Mixed Recyclable Paper	9.3%	7.6%	11.0%
Total Recyclable Paper	17.5%		
PET Bottles (#1)	3.0%	2.3%	3.6%
HDPE Bottles (#2)	1.5%	1.3%	1.7%
Non-Bottle Plastic Containers (#1 and #2)	0.7%	0.3%	1.1%
Other Plastic Containers (#3-#7)	1.0%	0.7%	1.3%
Tin/Steel Cans	2.0%	1.5%	2.5%
Aluminum Cans	1.1%	0.9%	1.4%
Glass Containers	4.7%	3.7%	5.8%
Total Recyclable Containers	14.1%		
Compostable Paper	4.9%	4.1%	5.6%
Clean Wood Waste	0.3%	-0.1%	0.7%
Yard Waste	4.1%	0.7%	7.5%
Food Waste	17.4%	15.0%	19.8%
Other Organics	3.3%	1.4%	5.2%
Total Potential Compostables	29.9%		
Aseptic/Polycoated Containers	0.3%	0.2%	0.4%
Bulky, Rigid Plastics	0.6%	0.1%	1.0%
Expanded Polystyrene Foam	2.2%	1.8%	2.6%
Ferrous Scrap Metals	0.4%	0.1%	0.8%
Aluminum Foil and Trays	0.8%	0.5%	1.0%
Non-Ferrous Scrap Metals	0.7%	0.0%	1.4%
Textiles/Leather	6.1%	4.4%	7.9%
Special Wastes	0.2%	0.0%	0.5%
Electronics (E-waste)	1.2%	0.2%	2.2%
C&D Debris	0.8%	0.1%	1.4%
Tires and Rubber	0.1%	0.0%	0.2%
Total Potential Recoverables	13.5%		
All Other Paper	2.8%	1.8%	3.9%
Plastic Film	8.4%	7.7%	9.0%
All Other Plastics	2.3%	1.9%	2.8%
White Goods and Small Appliances	0.2%	-0.1%	0.4%
Other Glass	0.3%	0.0%	0.5%
Household Batteries	0.1%	-0.1%	0.3%
Treated Wood Waste	0.1%	0.0%	0.2%
Diapers	3.9%	2.5%	5.3%
Composite Materials	4.9%	3.7%	6.2%
Liquids	1.2%	0.7%	1.7%
Grit	0.7%	0.0%	1.4%
Total Other Materials	25.0%		
TOTALS	100.0%		

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



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

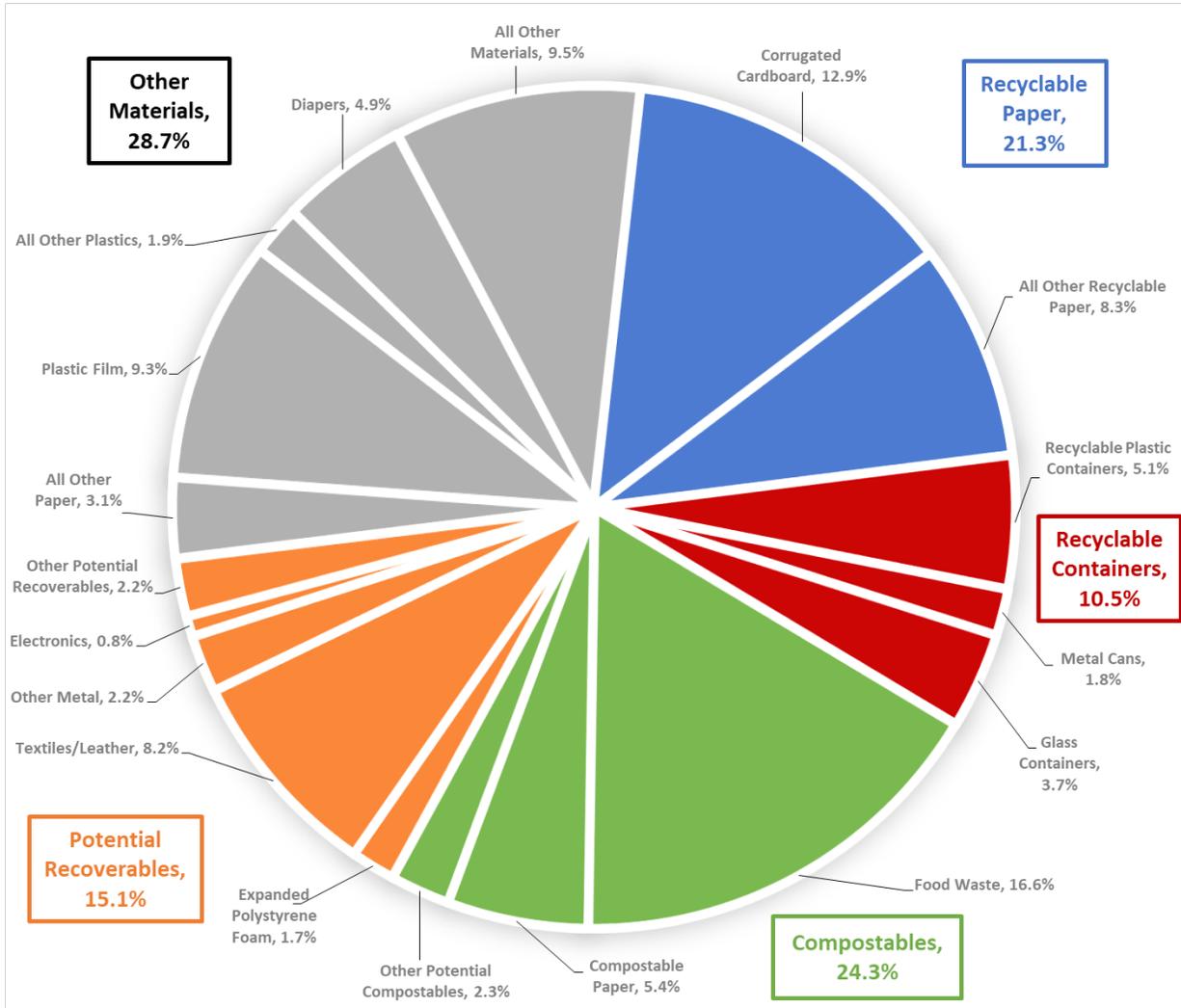
- “All other recyclable paper” refers to the categories of newspaper, office paper, and mixed recyclable paper.
- “Recyclable plastic containers” refers to the categories of PET bottles (#1), HDPE bottles (#2), non-bottle plastic containers #1 and #2, and other plastic containers #3-#7.
- “Metal cans” refers to the categories of aluminum and tin/steel cans.
- “Other metals” refers to the categories of ferrous and non-ferrous scrap metals and aluminum foil and trays.
- “Other potential recoverables” refers to the categories of aseptic/polycoated containers; bulky, rigid plastics; special wastes; C&D debris; and tires and rubber.
- “Other compostables” refers to the categories of compostable paper, clean wood waste, yard waste, and other organics.
- “All other materials” refers to the categories of white goods and small appliances, other glass, household batteries, treated wood waste, composite materials, liquids, and grit.

Figure 2-1: Composition of Residential Waste Disposed (% by Weight)

Table 2-9: Composition of Commercial Waste Disposed (% by weight)

Material Categories	Weighted Avg.	90% Confidence Interval	
		Lower Bounds	Upper Bounds
Newspaper	1.4%	-0.4%	3.2%
Corrugated Cardboard (OCC)	12.9%	10.3%	15.5%
Office Paper	1.1%	0.5%	1.8%
Mixed Recyclable Paper	5.8%	4.0%	7.6%
Total Recyclable Paper	21.3%		
PET Bottles (#1)	1.9%	1.5%	2.3%
HDPE Bottles (#2)	1.1%	0.7%	1.5%
Non-Bottle Plastic Containers (#1 and #2)	0.6%	0.2%	0.9%
Other Plastic Containers (#3-#7)	1.5%	1.0%	2.0%
Tin/Steel Cans	1.1%	0.8%	1.3%
Aluminum Cans	0.7%	0.5%	0.9%
Glass Containers	3.7%	2.0%	5.4%
Total Recyclable Containers	10.5%		
Compostable Paper	5.4%	4.0%	6.8%
Clean Wood Waste	0.3%	0.1%	0.4%
Yard Waste	1.2%	0.2%	2.2%
Food Waste	16.6%	12.8%	20.4%
Other Organics	0.9%	-0.1%	1.9%
Total Potential Compostables	24.3%		
Aseptic/Polycoated Containers	0.5%	0.1%	0.8%
Bulky, Rigid Plastics	1.3%	0.6%	2.1%
Expanded Polystyrene Foam	1.7%	1.2%	2.3%
Ferrous Scrap Metals	1.5%	0.8%	2.3%
Aluminum Foil and Trays	0.4%	0.2%	0.5%
Non-Ferrous Scrap Metals	0.3%	0.1%	0.5%
Textiles/Leather	8.2%	3.4%	13.0%
Special Wastes	0.2%	-0.1%	0.5%
Electronics (E-waste)	0.8%	0.1%	1.4%
C&D Debris	0.2%	0.1%	0.3%
Tires and Rubber	0.0%	0.0%	0.1%
Total Potential Recoverables	15.1%		
All Other Paper	3.1%	2.5%	3.8%
Plastic Film	9.3%	7.9%	10.8%
All Other Plastics	1.9%	1.4%	2.3%
White Goods and Small Appliances	0.1%	0.0%	0.1%
Other Glass	1.3%	-0.3%	2.8%
Household Batteries	0.0%	0.0%	0.0%
Treated Wood Waste	1.5%	0.6%	2.4%
Diapers	4.9%	1.9%	7.9%
Composite Materials	3.8%	1.9%	5.7%
Liquids	2.4%	0.6%	4.2%
Grit	0.5%	0.0%	0.9%
Total Other Materials	28.7%		
TOTALS	100.0%		

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



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

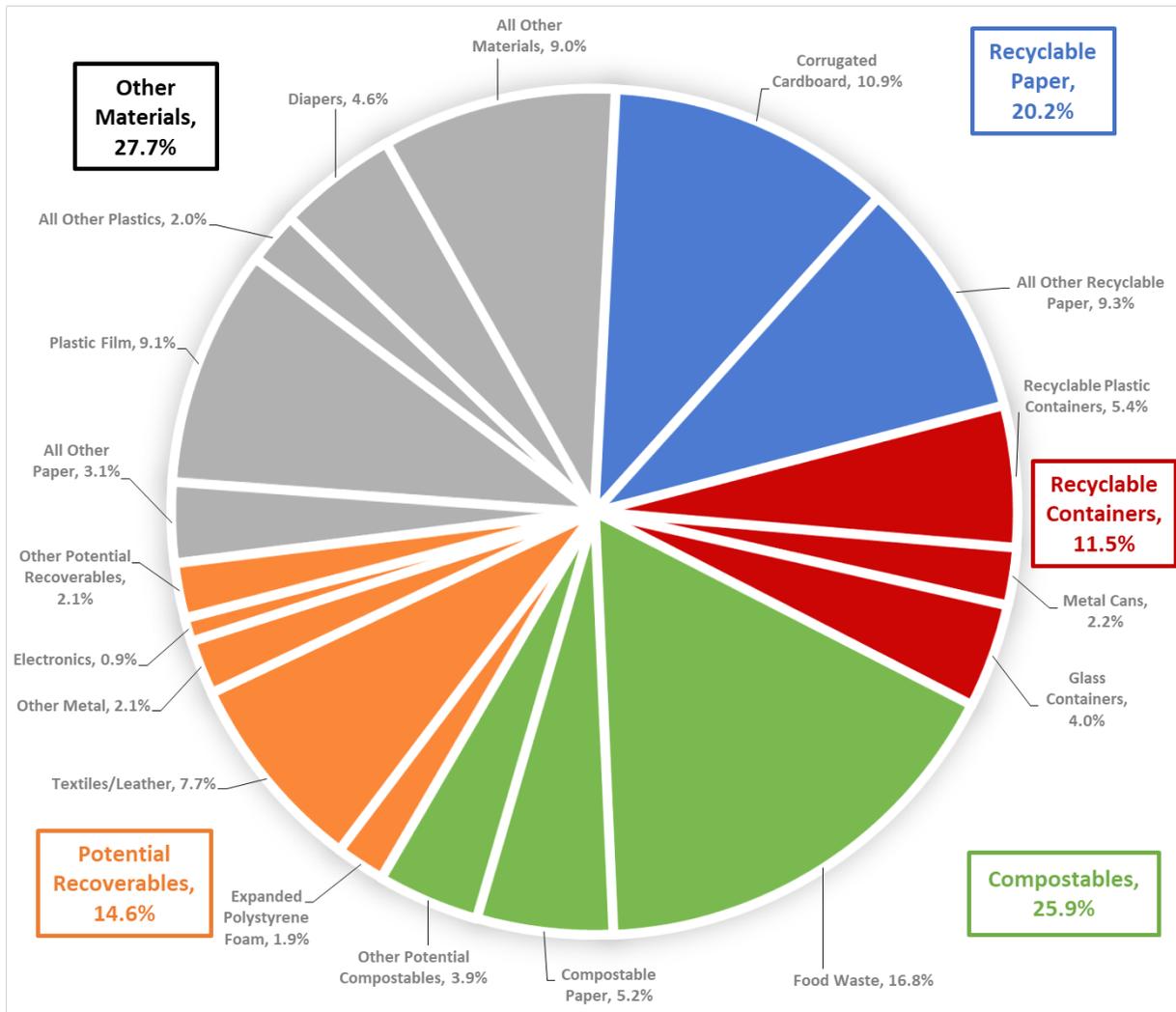
- “All other recyclable paper” refers to the categories of newspaper, office paper, and mixed recyclable paper.
- “Recyclable plastic containers” refers to the categories of PET bottles (#1), HDPE bottles (#2), non-bottle plastic containers #1 and #2, and other plastic containers #3-#7.
- “Metal cans” refers to the categories of aluminum and tin/steel cans.
- “Other metals” refers to the categories of ferrous and non-ferrous scrap metals and aluminum foil and trays.
- “Other potential recoverables” refers to the categories of aseptic/polycoated containers; bulky, rigid plastics; special wastes; C&D debris; and tires and rubber.
- “Other compostables” refers to the categories of compostable paper, clean wood waste, yard waste, and other organics.
- “All other materials” refers to the categories of white goods and small appliances, other glass, household batteries, treated wood waste, composite materials, liquids, and grit.

Figure 2-2: Composition of Commercial Waste Disposed (% by Weight)

Table 2-10: Composition of Aggregate Waste Disposed (% by weight)

Material Categories	Residential	Commercial	Aggregate
Newspaper	1.6%	1.4%	1.5%
Corrugated Cardboard (OCC)	5.6%	12.9%	10.7%
Office Paper	1.1%	1.1%	1.1%
Mixed Recyclable Paper	9.3%	5.8%	6.9%
Total Recyclable Paper	17.5%	21.3%	20.1%
PET Bottles (#1)	3.0%	1.9%	2.2%
HDPE Bottles (#2)	1.5%	1.1%	1.2%
Non-Bottle Plastic Containers (#1 and #2)	0.7%	0.6%	0.6%
Other Plastic Containers (#3-#7)	1.0%	1.5%	1.4%
Tin/Steel Cans	2.0%	1.1%	1.4%
Aluminum Cans	1.1%	0.7%	0.8%
Glass Containers	4.7%	3.7%	4.0%
Total Recyclable Containers	14.1%	10.5%	11.6%
Compostable Paper	4.9%	5.4%	5.2%
Clean Wood Waste	0.3%	0.3%	0.3%
Yard Waste	4.1%	1.2%	2.1%
Food Waste	17.4%	16.6%	16.8%
Other Organics	3.3%	0.9%	1.6%
Total Potential Compostables	29.9%	24.3%	26.1%
Aseptic/Polycoated Containers	0.3%	0.5%	0.4%
Bulky, Rigid Plastics	0.6%	1.3%	1.1%
Expanded Polystyrene Foam	2.2%	1.7%	1.9%
Ferrous Scrap Metals	0.4%	1.5%	1.2%
Aluminum Foil and Trays	0.8%	0.4%	0.5%
Non-Ferrous Scrap Metals	0.7%	0.3%	0.4%
Textiles/Leather	6.1%	8.2%	7.6%
Special Wastes	0.2%	0.2%	0.2%
Electronics (E-waste)	1.2%	0.8%	0.9%
C&D Debris	0.8%	0.2%	0.3%
Tires and Rubber	0.1%	0.0%	0.1%
Total Potential Recoverables	13.5%	15.1%	14.6%
All Other Paper	2.8%	3.1%	3.0%
Plastic Film	8.4%	9.3%	9.0%
All Other Plastics	2.3%	1.9%	2.0%
White Goods and Small Appliances	0.2%	0.1%	0.1%
Other Glass	0.3%	1.3%	1.0%
Household Batteries	0.1%	0.0%	0.0%
Treated Wood Waste	0.1%	1.5%	1.1%
Diapers	3.9%	4.9%	4.6%
Composite Materials	4.9%	3.8%	4.2%
Liquids	1.2%	2.4%	2.1%
Grit	0.7%	0.5%	0.5%
Total Other Materials	25.0%	28.7%	27.6%
TOTALS	100.0%	100.0%	100.0%
Percent of Total Tonnage (March '18)	30.6%	69.4%	100.0%

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



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

- "All other recyclable paper" refers to the categories of newspaper, office paper, and mixed recyclable paper.
- "Recyclable plastic containers" refers to the categories of PET bottles (#1), HDPE bottles (#2), non-bottle plastic containers #1 and #2, and other plastic containers #3-#7.
- "Metal cans" refers to the categories of aluminum and tin/steel cans.
- "Other metals" refers to the categories of ferrous and non-ferrous scrap metals and aluminum foil and trays.
- "Other potential recoverables" refers to the categories of aseptic/polycoated containers; bulky, rigid plastics; special wastes; C&D debris; and tires and rubber.
- "Other compostables" refers to the categories of compostable paper, clean wood waste, yard waste, and other organics.
- "All other materials" refers to the categories of white goods and small appliances, other glass, household batteries, treated wood waste, composite materials, liquids, and grit.

Figure 2-3: Composition of Aggregate Waste Disposed (% by Weight)

Table 2-11: Comparison of Current WCS to 2004 WCS (% by weight)

	2004	2018	
Newspaper	7.4%	1.5%	Newspaper
Corrugated Cardboard	6.1%	10.7%	Corrugated Cardboard (OCC)
Office Paper	1.9%	1.1%	Office Paper
Magazines/Glossy	3.1%	6.9%	Mixed Recyclable Paper
Paperboard	6.1%		
Mixed (Recyclable) Paper	3.4%		
Total Recyclable Paper	28.0%	20.1%	Total Recyclable Paper
PET Bottles (#1)	1.7%	2.2%	PET Bottles (#1)
HDPE Bottles (#2)	1.2%	1.2%	HDPE Bottles (#2)
(Included in Other Rigid Plastics)	-	0.6%	Non-Bottle Plastic Containers (#1 and #2)
#3-#7 Bottles	0.3%	1.4%	Other Plastic Containers (#3-#7)
Steel Cans	2.0%	1.4%	Tin/Steel Cans
Aluminum Cans	0.9%	0.8%	Aluminum Cans
Clear Glass	2.5%	4.0%	Glass Containers
Green Glass	0.7%		
Amber Glass	1.7%		
Total Recyclable Containers	11.0%	11.6%	Total Recyclable Containers
(Included in Other Non-recyclable Paper)	-	5.2%	Compostable Paper
Wood (non-C&D)	1.2%	0.3%	Clean Wood Waste
Yard Waste	3.4%	2.1%	Yard Waste
Food Waste	13.9%	16.8%	Food Waste
Other Organics	1.2%	1.6%	Other Organics
Total Potential Compostables	19.7%	26.1%	Total Potential Compostables
(Included in Mixed Recyclable Paper)	-	0.4%	Aseptic/Polycoated Containers
(Included in Other Rigid Plastics)	-	1.1%	Bulky, Rigid Plastics
Expanded Polystyrene	2.1%	1.9%	Expanded Polystyrene Foam
Other Ferrous Metal	1.2%	1.2%	Ferrous Scrap Metals
Other Non-Ferrous Metal	0.8%	0.5%	Aluminum Foil and Trays
		0.4%	Non-Ferrous Scrap Metals
Textiles	6.2%	7.6%	Textiles/Leather
Household Hazardous Waste	0.6%	0.2%	Special Wastes
Televisions	0.1%	0.9%	Electronics (E-waste)
Computers	0.2%		
Other Electronics	0.6%		
Drywall	0.0%	0.3%	C&D Debris
Inerts	1.1%		
Carpet	0.3%		
Other C&D	0.3%		
Tires	0.0%	0.1%	Tires and Rubber
Total Potential Recoverables	13.5%	14.6%	Total Potential Recoverables
Other (Non-recyclable) Paper	6.6%	3.0%	All Other Paper
Film Plastic	8.6%	9.0%	Plastic Film
Other Rigid Plastics	4.4%	2.0%	All Other Plastics
(Included in Other Inorganics)	-	0.1%	White Goods and Small Appliances
Other Glass	0.4%	1.0%	Other Glass
(Included in Other Inorganics)	-	0.0%	Household Batteries
Wood (C&D)	1.1%	1.1%	Treated Wood Waste
Diapers	3.0%	4.6%	Diapers
Other Inorganics	0.7%	4.2%	Composite Materials
(Not measured)	-	2.1%	Liquids
Fines	2.8%	0.5%	Grit
Total Other Materials	27.6%	27.6%	Total Other Materials

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

Table 2-12: Composition of Bulky/C&D Waste from Visual Audits

Material Category	Weighted Average (% by volume)	90% Confident Interval		Total Volume (CY)	Average Density (pounds [lbs.]/CY)	Estimated Total Weight (lbs.)	Weighted Average (% by weight)
		Lower Bounds	Upper Bounds				
Treated Wood	11.2%	5.7%	16.7%	24.5	400	9,804	14.9%
Untreated Wood	22.7%	9.9%	35.4%	49.6	400	19,853	30.3%
Carpet and Padding	3.1%	-0.5%	6.7%	6.8	84.4	570	0.9%
Drywall	10.8%	-1.7%	23.3%	23.6	600	14,186	21.6%
Roofing Shingles	0.3%	-1.0%	1.6%	0.7	731	482	0.7%
Rock/Gravel/Grit	0.0%	0.0%	0.0%	0.0	1500	0	0.0%
Bagged C&D Debris	1.2%	-0.2%	2.5%	2.6	150	383	0.6%
Fiberglass	3.6%	-0.6%	7.7%	7.8	17	133	0.2%
Other C&D	0.7%	-0.1%	1.6%	1.6	150	241	0.4%
Total C&D Debris	53.5%						69.6%
Furniture	5.2%	0.3%	10.2%	11.4	145	1,653	2.5%
Mattresses	3.6%	-1.4%	8.5%	7.8	55	429	0.7%
Total Furniture	8.8%						3.2%
Corrugated Cardboard	12.3%	2.4%	22.2%	26.9	50	1,346	2.1%
Other Paper	0.2%	-0.2%	0.7%	0.5	364	191	0.3%
Total Paper	12.5%						2.3%
Major Appliances	0.5%	-0.4%	1.5%	1.2	145	174	0.3%
Heating Ventilation and Air Conditioning (HVAC)	0.0%	0.0%	0.0%	0.0	47	0	0.0%
Other Non-Ferrous	0.3%	-0.2%	0.8%	0.7	150	108	0.2%
Other Ferrous	2.9%	-1.8%	7.6%	6.3	150	945	1.4%
Total Metals	3.8%						1.9%
Plastic Film	1.2%	0.1%	2.3%	2.6	23	60	0.1%
Polystyrene/Insulation	3.1%	-2.9%	9.2%	6.9	17	117	0.2%
Rigid Plastics	3.8%	-0.2%	7.8%	8.3	50	416	0.6%
Total Plastics	8.1%						0.9%
Computers	0.1%	-0.2%	0.3%	0.1	763.0	92	0.1%
Televisions	0.7%	-0.5%	1.9%	1.5	405.0	608	0.9%
Other E-Waste	0.0%	0.0%	0.0%	0.0	763.0	0	0.0%
Total E-Waste	0.7%						1.1%
Yard Waste	3.5%	-1.2%	8.2%	7.7	300	2,322	3.5%
Dirt/Soil	4.7%	-4.3%	13.6%	10.2	929	9,476	14.4%
Household Bagged Waste	2.9%	0.4%	5.3%	6.3	150	945	1.4%
Glass	0.0%	0.0%	0.0%	0.0	1000	0	0.0%
Tires	0.1%	-0.1%	0.4%	0.3	1350	405	0.6%
Textiles	0.0%	0.0%	0.0%	0.0	175	0	0.0%
Mixed Residue	1.4%	-1.0%	3.7%	3.0	225	675	1.0%
Total Other Materials	12.6%						21.1%
	100.0%					64,507	100.0%



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

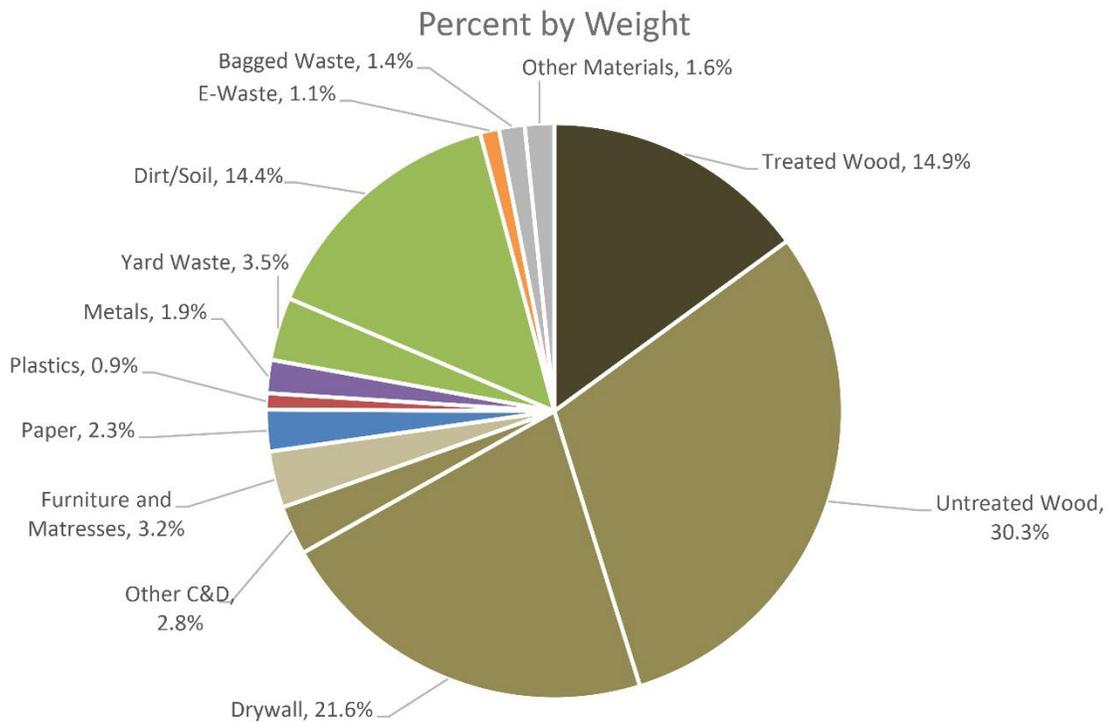
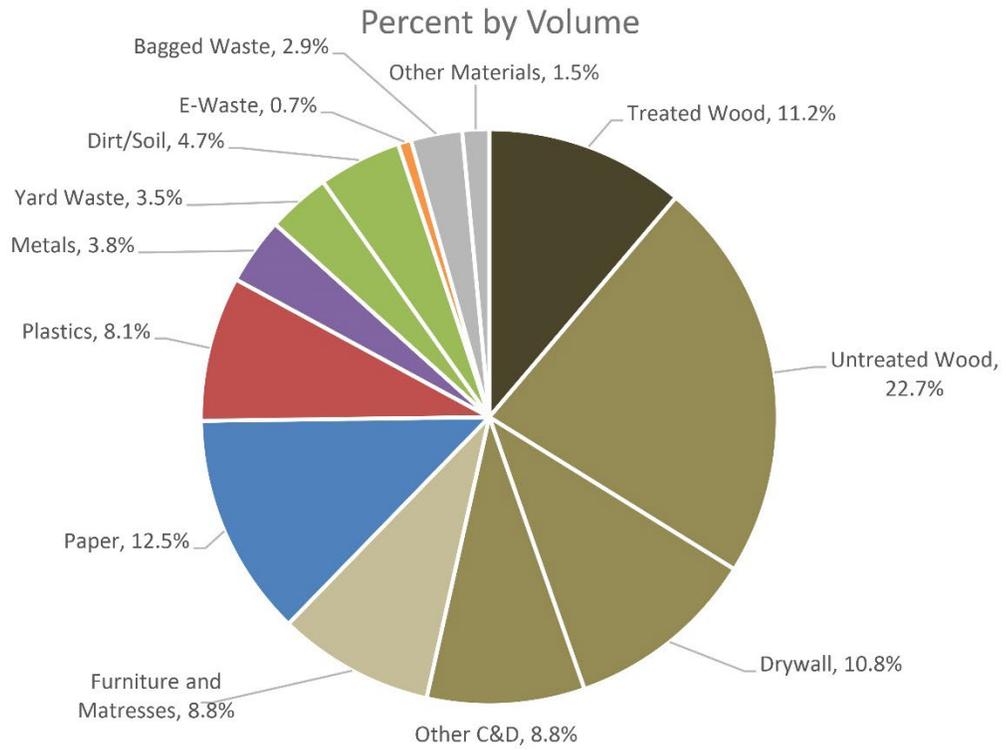


Figure 2-4: Composition of C&D Debris/Bulky Waste (% by Volume and Weight)

Attachment A – Material Categories

#	Material Categories	Description of Categories
1	Newspaper	Newspaper (loose or tied), including other paper normally distributed inside newspaper such as ads, flyers, etc. and other items made from newsprint, such as advertising guides. Newspaper found inside plastic sleeve will be removed from plastic and sorted accordingly.
2	Corrugated Cardboard (OCC)	Uncoated cardboard boxes with a wavy core (no plastic liners, waxy coatings). Examples include shipping and moving boxes, packing boxes, and pizza boxes.
3	Office Paper	Printed or unprinted paper typically generated in an office environment including white, colored, coated, and uncoated papers; envelopes; index cards; and manila- and pastel-colored file folders. <i>Includes shredded paper.</i>
4	Mixed Recyclable Paper	All other recyclable paper not included in categories above. Examples include magazines, telephone books, catalogs, paperboard, chipboard, brown paper bags, mail, paperback books, blueprints, and other printed material on glossy and non-glossy paper.
5	Compostable Paper	Generally low-grade, non-recyclable paper without a heavy plastic coating, including napkins, tissues, paper towels, and uncoated paper plates.
6	All Other Paper	Non-compostable, non-recyclable paper products with a heavy plastic coating (e.g., waxy or plastic-coated OCC, paper to-go cups, French fry containers, coated paper plates, fast-food wrappers, wax and parchment paper, and ice cream tubs). Includes paper covered with paint or other non-food contamination.
7	Aseptic/Polycoated Containers	Gable-top cartons, aseptic juice boxes, and other similar containers made of coated paperboard. <i>Does not include plastic drink pouches (e.g., Capri-Sun).</i>
8	PET Bottles (#1)	Clear and colored bottles and jars made of polyethylene terephthalate (PET #1). Examples include soda bottles, water bottles, etc. <i>Does not include loose caps.</i>
9	HDPE Bottles (#2)	Clear/natural and opaque, pigmented bottles made of HDPE (HDPE #2). Examples include milk jugs, detergent bottles, etc. <i>Does not include loose caps and lids.</i>
10	Non-Bottle PET and HDPE Containers (#1 and #2)	Clear and colored plastic non-bottle containers coded PET #1. Examples include clamshell containers, fruit/vegetable platters, and some clear disposable cups. Wide-mouthed tubs and containers coded HDPE #2, including lids. Examples include large plastic coffee containers, and plastic chip tubes.

#	Material Categories	Description of Categories
11	Other Plastic Containers (#3-#7)	All plastic containers coded #3, #4, #5, #6, or #7. Examples include yogurt cups, plastic drink cups (except those coded #1), plastic to-go containers (except those coded #1), some pill bottles, Arizona Iced Tea™ gallon jugs. <i>Does not include expanded polystyrene containers coded #6</i>
12	Bulky, Rigid Plastics	Non-container rigid plastic items such as plastic drums, crates, buckets, baskets, toys, refuse totes, lawn furniture, flower pots, laundry baskets, and other large plastic items. <i>Does not include electronic toys.</i>
13	Expanded Polystyrene Foam (Styrofoam®)	Container and non-container materials made of expanded polystyrene, which are typically white but may be pigmented. Examples include coolers, packaging materials, packing peanuts, egg cartons, clamshell containers, and disposable cups and plates.
14	Plastic Film	Loose and bagged plastic retail bags, garbage bags, shrink wrap, re-sealable bags, plastic sheeting, Saran™ wrap, Visqueen, disposable gloves, etc. <i>Does not include foil-lined plastic film (e.g., chip bags).</i>
15	All Other Plastics	Any plastic materials not categorized above, such as deodorant cases, plastic utensils, straws, toothbrushes, broom heads, etc.
16	Tin/Steel Cans	Tin-plated steel cans, usually food containers and aerosol cans, including labels. <i>Also includes steel caps and lids.</i>
17	Ferrous Scrap Metals	Non-container ferrous (magnetic) metal materials. Examples include clothes hangers, sheet metal products, pipes, miscellaneous metal scraps, pots and pans, and other magnetic metal items.
18	Aluminum Cans	Aluminum soft drink, beer, and some food and aerosol cans.
19	Aluminum Foil and Trays	Aluminum foil and food trays, such as disposal pie plates and catering trays.
20	Non-Ferrous Scrap Metals	Non-container non-ferrous (non-magnetic) metal materials. Examples include aluminum pots and pans, copper wiring and tubing, and brass fixtures.
21	White Goods and Small Appliances	Household appliances such as refrigerators, stoves, coffee makers, microwaves, fans, irons, hair driers, electrical kitchenware, and salvageable items such as machinery.
22	Glass Containers	Clear, green, blue, and amber glass bottles and jars, as well as pieces of broken glass bottles and jars.
23	Other Glass	Windowpanes, mirrors, ceramics, drinking glasses, and glass containers in colors other than clear, green, blue, or amber.
24	Textiles/Leather	Clothing apparel, rags, leather, blankets, curtains, shoes, wallets, purses, belts, and scrap leather.
25	Special Wastes	Materials that are considered household hazardous waste, including cleaners, oil, paint, pesticides, pool chemicals, fluorescent lights, medical waste, solvents, rechargeable batteries, etc. <i>Does not include syringes without needles.</i>

#	Material Categories	Description of Categories
26	Electronics (E-waste)	Electronic devices (i.e. items with a circuit board), including televisions, computers, cell phones, cordless telephones, handheld devices, etc. <i>Does not include electric devices (i.e. battery or electric-powered items without a circuit board), extension cords and chargers, headphones and earbuds, and electronic media (e.g., DVDs and CDs).</i>
27	Household Batteries	Non-rechargeable household batteries including AA, AAA, C, D, 9-volt, and button types.
28	Clean Wood Waste	Untreated and unpainted lumber, pallets, and dimensional lumber. Also includes untreated/unpainted wood furniture including chairs, cabinets, dressers, etc.
29	Treated Wood Waste	Treated and painted lumber, pallets, and dimensional lumber, including treated/painted wood furniture. Also includes engineered wood such as plywood, particle board, oriented strand board, fiberboard, and laminate.
30	C&D Debris	C&D debris including concrete and other inert debris (brick, rocks, sand), carpet and padding, drywall, insulation, full and empty caulk tubes, paint supplies, and roofing materials.
31	Tires and Rubber	Tires of any size and other items made of rubber.
32	Yard Waste	Shrub and brush pruning's, household bedding plants, weeds, leaves, grass clippings, and other landscaping and gardening wastes.
33	Food Waste	Packaged/loose meat and vegetable waste. Includes coffee grounds, tea bags and single-use coffee pods (i.e., K-cups).
34	Other Organics	Other organic material such as pet waste (e.g., bagged dog waste and cat litter), natural fiber or wicker products, corks, lint, and hair.
35	Diapers	All child and adult diapers and incontinence aids. Includes feminine hygiene products.
36	Composite Materials	Products that are composite of materials such as cigarette packages, binders, laminated paper, electrical devices other than electronics or small appliances, extension cords, string lights, Pringle's® cans, chip bags, etc.
37	Liquids	All liquids found within containers. Containers will be sorted into their appropriate categories.
38	Grit	Any grit or fines remaining on the sort table that cannot be defined in the other categories.



Attachment B - Residential Sample Results

Hauler/Location	Material Categories	sample #	Residential - Advanced, Mon. 5/14, (Truck #357, Route #630)	Residential - Advanced, Mon. 5/14, (Truck #241532, Route #631)	Residential - Orion, Mon. 5/14, (Truck #3074, Route #4)	Residential - Orion, Mon. 5/14 (Truck #3062, Route #5)	Residential - Orion, Tue. 5/15, (Truck #3065, Route #6)	Residential - Advanced, Tue. 5/15, (Truck #357, Route #630)	Residential - Advanced, Tue. 5/15, (Truck #241532, Route #631)
			5	6	8	10	17	18	19
1	Newspaper		1.9%	0.3%	3.5%	3.7%	0.4%	0.8%	1.8%
2	Corrugated Cardboard (OCC)		7.2%	4.8%	3.6%	8.6%	10.8%	9.9%	4.3%
3	Office Paper		5.8%	0.6%	0.0%	1.5%	0.0%	0.0%	0.4%
4	Mixed Recyclable Paper		13.9%	9.9%	1.1%	9.8%	7.1%	9.1%	12.5%
5	Compostable Paper		4.3%	3.9%	5.2%	6.2%	3.4%	5.9%	3.6%
6	All Other Paper		2.3%	1.2%	8.3%	1.0%	2.6%	3.9%	2.0%
7	Aseptic/Polycoated Containers		0.6%	0.2%	0.5%	0.4%	0.0%	0.2%	0.4%
8	PET Bottles (#1)		3.0%	2.1%	3.0%	1.7%	2.8%	4.2%	3.7%
9	HDPE Bottles (#2)		0.7%	1.2%	1.6%	1.2%	1.6%	2.3%	1.5%
10	Non-Bottle Plastic Containers (#1 and #2)		0.0%	0.9%	0.2%	0.0%	0.2%	0.5%	0.5%
11	Other Plastics Containers (#3-#7)		2.5%	0.8%	1.0%	0.5%	0.9%	0.9%	0.7%
12	Bulky, Rigid Plastics		0.5%	0.0%	0.2%	1.6%	0.0%	0.8%	2.7%
13	Expanded Polystyrene Foam		2.6%	1.8%	1.2%	2.3%	1.8%	3.0%	2.0%
14	Non-Rigid Plastic Film		7.4%	9.3%	7.9%	10.0%	9.8%	9.0%	6.7%
15	All Other Plastics		1.9%	1.7%	2.8%	2.6%	2.2%	2.3%	1.4%
16	Tin/Steel Cans		1.2%	0.8%	3.3%	3.8%	1.7%	1.4%	1.0%
17	Ferrous Scrap Metals		0.1%	0.7%	0.0%	0.2%	0.5%	2.1%	1.2%
18	Aluminum Cans		0.9%	1.0%	0.9%	1.4%	0.9%	1.9%	0.8%
19	Aluminum Foil and Trays		0.2%	0.9%	1.1%	0.7%	0.9%	1.1%	0.2%
20	Non-Ferrous Scrap Metals		1.3%	3.8%	3.1%	0.0%	0.0%	0.0%	0.0%
21	White Goods and Small Appliances		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%
22	Glass Containers		1.9%	3.3%	7.9%	3.3%	4.7%	5.9%	2.8%
23	Other Glass		0.3%	1.2%	1.0%	0.5%	0.0%	0.0%	0.0%
24	Textiles/Leather		2.6%	3.8%	7.0%	2.0%	12.4%	4.5%	8.7%
25	Special Wastes		0.0%	0.0%	1.7%	0.0%	0.0%	0.9%	0.0%
26	Electronics (E-waste)		0.0%	6.3%	0.0%	0.3%	3.4%	1.1%	0.0%
27	Household Batteries		0.0%	0.0%	0.1%	1.4%	0.0%	0.0%	0.0%
28	Clean Wood Waste		2.6%	0.0%	0.9%	0.2%	0.0%	0.0%	0.0%
29	Treated Wood Waste		0.0%	0.0%	0.0%	0.8%	0.0%	0.5%	0.0%
30	C&D Debris		0.0%	4.2%	0.3%	0.0%	1.1%	0.5%	0.0%
31	Tires and Rubber		0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%
32	Yard Waste		5.3%	0.0%	0.0%	0.0%	0.0%	0.2%	19.4%
33	Food Waste		14.9%	22.4%	11.1%	15.6%	16.6%	18.9%	12.1%
34	Other Organics		0.9%	2.0%	9.4%	6.4%	0.3%	0.4%	1.2%
35	Diapers		3.2%	3.6%	1.3%	5.6%	10.7%	2.4%	2.2%
36	Composite Materials		9.8%	6.4%	7.7%	6.3%	2.6%	3.1%	2.7%
37	Liquids		0.3%	0.7%	2.5%	0.5%	0.6%	2.2%	1.7%
38	Grit		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Attachment B - Residential Sample Results (continued)

Hauler/Location		Residential - Orion, Tue. 5/15, (Truck #3070, Route #7)	Residential - Orion, Wed. 5/16, (Truck #3067, Route #2)	Residential - Advanced, Wed. 5/16, (Truck #241532, Route #631)	Residential - Orion, Thu. 5/17, (Truck #3076, Route #3)	Residential - Advanced, Thu. 5/17, (Truck #241532, Route #631)
	Material Categories sample	20	21	25	30	32
1	Newspaper	0.2%	4.2%	0.9%	0.5%	0.4%
2	Corrugated Cardboard (OCC)	0.5%	5.5%	2.8%	5.1%	4.1%
3	Office Paper	0.1%	0.5%	0.3%	0.5%	2.8%
4	Mixed Recyclable Paper	11.2%	7.7%	11.1%	7.2%	10.7%
5	Compostable Paper	4.0%	7.8%	6.0%	4.6%	3.3%
6	All Other Paper	2.1%	1.1%	2.2%	3.7%	3.5%
7	Aseptic/Polycoated Containers	0.3%	0.0%	0.5%	0.0%	0.2%
8	PET Bottles (#1)	1.8%	4.6%	4.5%	3.5%	0.6%
9	HDPE Bottles (#2)	1.4%	2.0%	1.8%	1.3%	1.4%
10	Non-Bottle Plastic Containers (#1 and #2)	0.7%	0.8%	0.8%	1.3%	2.8%
11	Other Plastics Containers (#3-#7)	0.9%	1.2%	0.7%	1.6%	0.5%
12	Bulky, Rigid Plastics	0.0%	0.1%	0.0%	0.0%	0.9%
13	Expanded Polystyrene Foam	1.3%	2.2%	3.8%	3.1%	1.8%
14	Non-Rigid Plastic Film	7.0%	10.0%	9.3%	7.3%	6.8%
15	All Other Plastics	4.6%	2.8%	2.4%	1.6%	1.5%
16	Tin/Steel Cans	1.2%	2.8%	2.7%	2.7%	2.1%
17	Ferrous Scrap Metals	0.0%	0.2%	0.1%	0.2%	0.0%
18	Aluminum Cans	2.0%	1.3%	0.8%	1.0%	0.8%
19	Aluminum Foil and Trays	0.0%	1.1%	1.4%	0.9%	0.4%
20	Non-Ferrous Scrap Metals	0.0%	0.1%	0.0%	0.0%	0.4%
21	White Goods and Small Appliances	0.0%	0.0%	0.0%	0.0%	0.0%
22	Glass Containers	4.5%	3.4%	6.1%	8.2%	4.9%
23	Other Glass	0.0%	0.0%	0.0%	0.0%	0.0%
24	Textiles/Leather	4.3%	3.0%	6.0%	9.3%	10.5%
25	Special Wastes	0.1%	0.0%	0.0%	0.0%	0.0%
26	Electronics (E-waste)	0.5%	1.6%	0.0%	0.0%	1.4%
27	Household Batteries	0.0%	0.2%	0.0%	0.0%	0.0%
28	Clean Wood Waste	0.0%	0.0%	0.0%	0.0%	0.0%
29	Treated Wood Waste	0.0%	0.0%	0.2%	0.0%	0.0%
30	C&D Debris	0.0%	1.1%	0.0%	0.2%	1.7%
31	Tires and Rubber	0.8%	0.0%	0.0%	0.0%	0.0%
32	Yard Waste	15.9%	0.5%	1.0%	2.9%	3.9%
33	Food Waste	13.9%	15.4%	24.3%	25.8%	17.8%
34	Other Organics	10.5%	2.0%	0.3%	0.3%	5.5%
35	Diapers	1.4%	6.4%	3.6%	4.0%	2.6%
36	Composite Materials	4.9%	6.7%	2.9%	1.9%	3.6%
37	Liquids	0.5%	0.9%	0.6%	1.0%	2.9%
38	Grit	3.2%	2.7%	3.0%	0.0%	0.0%

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

Attachment C - Commercial Sample Results

Hauler/Location		Commercial - Advanced, Mon. 5/14, (Truck #132579, Route #1911)	Commercial - Orion, Mon. 5/14, (Truck #5039, Route #1)	Commercial - Advanced, Mon. 5/14, (Truck #172055, Route #1909)	Commercial - Waste Mgmt., Mon. 5/14, (Truck #210348, Route	Commercial - Advanced, Mon. 5/14, (Truck #132579, Route #1911)	Commercial - Advanced, Mon. 5/14, (Truck #172055, Route #1909)	Commercial - Advanced, Tue. 5/15, (Truck #132579, Route #2911)
Material Categories	sample #	1	2	3	4	7	-	11
1	Newspaper	0.0%	0.0%	0.0%	0.6%	0.0%	0.5%	1.9%
2	Corrugated Cardboard (OCC)	24.3%	12.1%	9.2%	11.0%	28.5%	13.0%	11.2%
3	Office Paper	0.4%	0.0%	0.3%	1.9%	2.0%	0.5%	6.8%
4	Mixed Recyclable Paper	1.6%	3.5%	3.7%	6.3%	6.3%	5.8%	2.9%
5	Compostable Paper	8.8%	2.0%	5.5%	13.3%	2.9%	11.5%	3.3%
6	All Other Paper	0.2%	1.2%	2.9%	5.3%	1.3%	5.3%	3.1%
7	Aseptic/Polycoated Containers	0.5%	0.2%	0.1%	0.8%	0.0%	0.1%	0.2%
8	PET Bottles (#1)	0.9%	2.7%	1.2%	2.4%	2.8%	1.3%	2.1%
9	HDPE Bottles (#2)	0.6%	0.6%	0.4%	1.4%	0.4%	0.9%	0.9%
10	Non-Bottle Plastic Containers (#1 and #2)	0.2%	0.0%	0.3%	0.1%	0.0%	0.4%	0.7%
11	Other Plastics Containers (#3-#7)	2.0%	1.4%	1.3%	2.4%	0.5%	4.0%	2.4%
12	Bulky, rigid Plastics	0.0%	3.8%	0.0%	0.0%	0.0%	0.0%	0.0%
13	Expanded Polystyrene Foam	0.5%	1.6%	0.9%	5.8%	1.0%	1.7%	2.4%
14	Non-Rigid Plastic Film	10.6%	5.7%	17.0%	10.2%	9.7%	10.9%	17.0%
15	All Other Plastics	1.3%	1.2%	4.3%	4.4%	1.0%	0.9%	1.4%
16	Tin/Steel Cans	0.2%	0.5%	0.6%	0.6%	0.8%	2.5%	0.2%
17	Ferrous Scrap Metals	0.1%	4.1%	0.0%	0.7%	0.3%	0.6%	0.1%
18	Aluminum Cans	0.2%	1.2%	1.2%	0.2%	1.6%	0.8%	0.7%
19	Aluminum Foil and Trays	0.8%	0.3%	0.0%	0.6%	0.2%	0.1%	0.5%
20	Non-Ferrous Scrap Metals	0.7%	0.0%	0.0%	1.8%	0.0%	0.1%	0.0%
21	White Goods and Small Appliances	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%
22	Glass Containers	1.2%	3.2%	3.7%	0.1%	10.6%	7.9%	1.3%
23	Other Glass	0.0%	0.7%	0.1%	0.0%	1.3%	0.0%	0.0%
24	Textiles/Leather	10.1%	2.5%	6.2%	0.9%	1.2%	0.5%	4.2%
25	Special Wastes	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
26	Electronics (E-waste)	0.0%	2.0%	0.0%	0.2%	0.0%	0.8%	0.1%
27	Household Batteries	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
28	Clean Wood Waste	0.0%	0.1%	0.0%	0.0%	1.4%	0.0%	0.0%
29	Treated Wood Waste	0.0%	0.0%	0.0%	0.0%	5.5%	0.0%	4.3%
30	C&D Debris	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%
31	Tires and Rubber	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
32	Yard Waste	0.9%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
33	Food Waste	8.9%	14.4%	4.6%	23.5%	3.0%	26.3%	25.3%
34	Other Organics	0.0%	0.1%	11.1%	0.0%	4.2%	0.1%	0.2%
35	Diapers	22.4%	9.2%	9.8%	0.0%	0.0%	0.2%	0.8%
36	Composite Materials	1.5%	22.3%	11.2%	3.6%	5.5%	2.2%	3.5%
37	Liquids	1.3%	3.4%	3.1%	1.8%	6.7%	1.2%	2.0%
38	Grit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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



Attachment C - Commercial Sample Results (continued)

Hauler/Location	Material Categories	sample #	Commercial - Advanced, Tue. 5/15, (Truck #5036, Route #1)	Commercial - Waste Mgmt., Tue. 5/15, (Truck #210872, Route #V207)	Commercial - Advanced, Tue. 5/15, (Truck #122528, Route #2909)	Commercial - Advanced, Tue. 5/15, (Truck #132579, Route #2911)	Commercial - Advanced, Tue. 5/15, (Truck #122528, Route #2909)	Commercial - Advanced, Wed. 5/16, (Truck #132579, Route #3911)	Commercial - Waste Mgmt., Wed. 5/16, (Truck #210348, Route #1)
			12	13	14	15	16	22	23
1	Newspaper		0.6%	0.5%	0.3%	0.0%	0.0%	21.1%	0.0%
2	Corrugated Cardboard (OCC)		10.5%	9.1%	17.9%	11.2%	5.1%	8.4%	20.6%
3	Office Paper		0.1%	1.5%	0.0%	1.0%	0.0%	3.0%	1.8%
4	Mixed Recyclable Paper		5.2%	9.2%	5.2%	7.1%	3.9%	3.7%	5.6%
5	Compostable Paper		4.1%	4.4%	6.8%	2.2%	1.0%	1.5%	5.8%
6	All Other Paper		2.9%	5.6%	3.5%	2.1%	1.7%	2.3%	3.1%
7	Aseptic/Polycoated Containers		0.0%	3.3%	0.0%	0.0%	0.2%	0.0%	1.7%
8	PET Bottles (#1)		2.0%	3.5%	2.6%	1.2%	1.0%	2.3%	0.6%
9	HDPE Bottles (#2)		1.3%	2.1%	1.7%	0.5%	0.8%	4.3%	0.4%
10	Non-Bottle Plastic Containers (#1 and #2)		0.3%	4.4%	0.8%	0.3%	0.1%	0.3%	0.1%
11	Other Plastics Containers (#3-#7)		1.3%	2.9%	4.9%	0.8%	0.1%	0.1%	1.8%
12	Bulky, rigid Plastics		7.1%	0.2%	2.3%	1.0%	2.5%	1.2%	4.4%
13	Expanded Polystyrene Foam		2.2%	4.3%	1.3%	1.3%	0.8%	0.0%	4.0%
14	Non-Rigid Plastic Film		10.1%	8.1%	8.5%	9.6%	4.2%	4.5%	15.5%
15	All Other Plastics		1.5%	2.3%	0.0%	2.1%	0.8%	1.6%	3.9%
16	Tin/Steel Cans		1.3%	2.4%	1.2%	0.4%	1.5%	0.1%	0.5%
17	Ferrous Scrap Metals		0.2%	0.5%	0.6%	5.6%	1.3%	5.9%	1.2%
18	Aluminum Cans		0.7%	1.0%	0.5%	0.3%	0.4%	0.1%	0.2%
19	Aluminum Foil and Trays		1.3%	0.4%	0.5%	0.5%	0.1%	0.3%	0.0%
20	Non-Ferrous Scrap Metals		0.0%	0.0%	0.6%	0.2%	1.0%	0.0%	0.1%
21	White Goods and Small Appliances		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
22	Glass Containers		15.2%	0.8%	0.6%	1.3%	4.0%	0.0%	0.7%
23	Other Glass		0.0%	0.0%	0.0%	18.0%	0.0%	0.0%	0.0%
24	Textiles/Leather		1.1%	0.9%	3.9%	1.3%	52.8%	6.2%	3.1%
25	Special Wastes		0.0%	3.0%	0.0%	0.0%	0.0%	0.4%	3.1%
26	Electronics (E-waste)		0.0%	0.0%	0.0%	7.4%	1.2%	1.0%	0.0%
27	Household Batteries		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
28	Clean Wood Waste		0.0%	0.0%	0.0%	0.4%	0.7%	1.0%	0.4%
29	Treated Wood Waste		0.0%	0.0%	0.0%	6.6%	1.1%	6.3%	0.2%
30	C&D Debris		0.0%	0.0%	0.1%	1.0%	0.4%	0.0%	0.4%
31	Tires and Rubber		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
32	Yard Waste		5.6%	0.0%	2.9%	2.1%	0.4%	10.1%	0.0%
33	Food Waste		18.9%	26.3%	28.7%	9.7%	4.7%	10.2%	18.6%
34	Other Organics		0.5%	0.0%	0.0%	0.0%	1.5%	0.4%	0.0%
35	Diapers		2.3%	0.0%	0.6%	0.0%	5.5%	1.1%	0.0%
36	Composite Materials		2.8%	3.5%	2.6%	5.0%	1.1%	1.6%	0.8%
37	Liquids		1.0%	2.7%	1.6%	0.0%	0.3%	0.8%	1.3%
38	Grit		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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



Attachment C - Commercial Sample Results (continued)

Hauler/Location		Commercial - Advanced, Wed. 5/16, (Truck #132579, Route #3911)	Commercial - Advanced, Wed. 5/16, (Truck #162580, Route #3909)	Commercial - Advanced, Thu. 5/17, (Truck #132579, Route #4911)	Commercial - Advanced, Thu. 5/17, (Truck #105, Route #4909)	Commercial - Advanced, Thu. 5/17, (Truck #132574, Route #4911)	Commercial - Advanced, Thu. 5/17, (Truck #105, Route #4909)
Material Categories	sample #	24	26	27	28	29	31
Newspaper	1	0.9%	0.5%	0.2%	0.4%	0.1%	0.1%
Corrugated Cardboard (OCC)	2	3.0%	6.3%	9.2%	20.0%	21.1%	13.9%
Office Paper	3	0.1%	3.4%	0.5%	0.2%	0.1%	0.0%
Mixed Recyclable Paper	4	6.7%	7.7%	2.2%	23.7%	2.7%	5.4%
Compostable Paper	5	3.5%	4.0%	11.7%	7.6%	2.9%	8.3%
All Other Paper	6	2.2%	3.7%	7.4%	2.0%	2.8%	4.4%
Aseptic/Polycoated Containers	7	0.2%	0.2%	1.2%	0.2%	0.1%	0.0%
PET Bottles (#1)	8	4.2%	1.9%	1.0%	1.9%	2.0%	0.7%
HDPE Bottles (#2)	9	1.5%	0.1%	1.1%	0.5%	1.8%	0.5%
Non-Bottle Plastic Containers (#1 and #2)	10	1.4%	0.5%	0.4%	0.2%	0.2%	0.4%
Other Plastics Containers (#3-#7)	11	0.8%	0.8%	0.8%	1.0%	0.7%	0.5%
Bulky, rigid Plastics	12	0.0%	1.8%	0.8%	0.0%	0.2%	0.0%
Expanded Polystyrene Foam	13	1.7%	1.8%	0.4%	1.7%	1.3%	0.9%
Non-Rigid Plastic Film	14	10.3%	7.9%	6.9%	5.3%	6.5%	11.4%
All Other Plastics	15	1.7%	2.1%	0.9%	1.1%	1.6%	4.0%
Tin/Steel Cans	16	2.0%	0.8%	1.7%	0.8%	1.2%	1.0%
Ferrous Scrap Metals	17	3.3%	0.3%	0.0%	0.6%	0.0%	4.1%
Aluminum Cans	18	1.0%	0.9%	0.2%	1.2%	1.0%	1.7%
Aluminum Foil and Trays	19	0.3%	0.2%	0.1%	0.3%	0.3%	1.1%
Non-Ferrous Scrap Metals	20	0.1%	0.0%	0.0%	0.2%	0.0%	1.0%
White Goods and Small Appliances	21	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Glass Containers	22	5.5%	12.7%	0.5%	6.5%	2.2%	0.0%
Other Glass	23	0.0%	0.4%	0.0%	0.0%	0.1%	0.0%
Textiles/Leather	24	11.9%	27.9%	0.0%	5.1%	2.6%	1.5%
Special Wastes	25	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Electronics (E-waste)	26	0.7%	0.2%	0.0%	0.0%	0.0%	0.0%
Household Batteries	27	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clean Wood Waste	28	0.4%	0.1%	0.0%	0.2%	0.0%	0.0%
Treated Wood Waste	29	3.7%	0.0%	0.0%	0.3%	0.0%	0.0%
C&D Debris	30	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%
Tires and Rubber	31	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%
Yard Waste	32	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%
Food Waste	33	19.2%	3.2%	23.1%	6.4%	24.0%	36.4%
Other Organics	34	0.7%	0.2%	0.0%	0.0%	0.2%	0.0%
Diapers	35	6.2%	0.2%	28.3%	6.8%	0.7%	1.4%
Composite Materials	36	2.4%	4.3%	1.1%	2.2%	2.3%	1.3%
Liquids	37	0.8%	1.1%	0.5%	1.3%	21.3%	0.0%
Grit	38	2.7%	4.0%	0.0%	2.3%	0.0%	0.0%

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



Attachment D - Visual Audit Results

Hauler/Location		Trailer Park Roll-Off (Shearwood). Mon (5/14), 12:15 pm	University Hospital C&D Roll-Off (Big Dog)	Army Surplus Supply Roll-Off (Mark's) Tue (5/15), 8:40 am	General Construction Roll-off (Mark's)	Richmond Co. Schools Warehouse, Roll-off (WM) Wed (5/16), 1:20	Strip Mall Remodel Roll-Off (Mark's) Thu (5/17), 4:15 pm	Abandoned Building Demo Dump Trailer (River's Edge) Thu (5/17),	Trailer Home Demo Roll-off (JS Rowe) Thu (5/17), 3:15 pm
	Material Categories	1	2	3	4	5	6	7	8
1	Corrugated Cardboard	15.0%	0.0%	33.3%	5.0%	5.0%	35.0%	0.0%	0.0%
2	Other Paper	0.0%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%
3	Major Appliances	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	0.0%	0.0%
4	HVAC Ducting	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	Other Non-Ferrous	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%
6	Other Ferrous	0.0%	0.0%	0.0%	20.0%	0.0%	0.0%	0.0%	1.0%
7	Plastic Film	2.0%	0.0%	4.0%	0.0%	0.0%	3.0%	0.0%	0.0%
8	Polystyrene Foam/Insulation	0.0%	0.0%	0.0%	0.0%	0.0%	25.5%	0.0%	0.0%
9	Rigid Plastics	18.0%	2.0%	1.0%	0.0%	5.0%	1.5%	1.0%	0.0%
10	Yard Waste	0.0%	3.0%	0.0%	0.0%	20.0%	0.0%	7.0%	0.0%
11	Treated Wood	5.0%	0.0%	16.0%	10.1%	7.5%	24.0%	22.0%	12.8%
12	Untreated Wood	0.0%	21.0%	22.0%	24.8%	17.5%	6.0%	27.5%	63.8%
13	Carpet and Padding	14.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.5%
14	Drywall	1.0%	49.0%	0.0%	28.8%	0.0%	0.0%	0.0%	0.0%
15	Roofing Shingles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.5%	0.0%
16	Rock/Gravel/Grit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
17	Other C&D	0.0%	0.0%	2.0%	3.4%	0.0%	0.0%	0.0%	0.0%
18	Furniture	9.0%	0.0%	0.0%	0.0%	20.0%	0.0%	0.0%	9.0%
19	Mattresses	21.0%	0.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%
20	Bagged Waste – Household	10.0%	0.0%	5.0%	1.5%	0.0%	5.0%	0.0%	0.0%
21	Bagged Waste - C&D Debris	0.0%	5.0%	0.0%	3.5%	0.0%	0.0%	0.0%	0.0%
22	Glass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
23	Computers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%
24	Televisions	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
25	Other E-Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
26	Tires	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%
27	Textiles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
28	Dirt/Soil	0.0%	0.0%	0.0%	0.0%	20.0%	0.0%	35.0%	0.0%
29	Fiberglass	0.0%	18.0%	0.0%	3.0%	0.0%	0.0%	0.0%	5.0%
30	Mixed Residue	0.0%	0.0%	10.0%	0.0%	0.0%	0.0%	0.0%	0.0%
31	TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

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

Attachment E – Photos of Visual Audit Loads



Load #1



Load #2



Load #3

(Note: Photo for Load #4 is not available)

Attachment E– Photos of Visual Audit Loads (continued)



Load #5



Load #6



Load #7



Load #8