

Contractor's Report to the Board

Significant Tables and Figures

Statewide Waste Characterization Study: Results and Final Report

December 1999

***Produced under contract by:
Cascadia Consulting Group***



The tables and figures in this document are excerpted from the 1999 Statewide Waste Characterization Study: Results and Final Report, California Integrated Waste Management Board Publication #340-00-009. The table and figure names and numbers match those in the full report. For other data and more information, see the [complete study](#) or the [Executive Summary](#), available at www.ciwmb.ca.gov/publications/default.asp?pubid=824. This study used the CIWMB's 57 material types which were standard at the time. Since then, the list has been expanded. A list of the material types and their definitions used in this study can be found in Appendix B of the report.

Figure 2: Overview of Overall Waste Stream

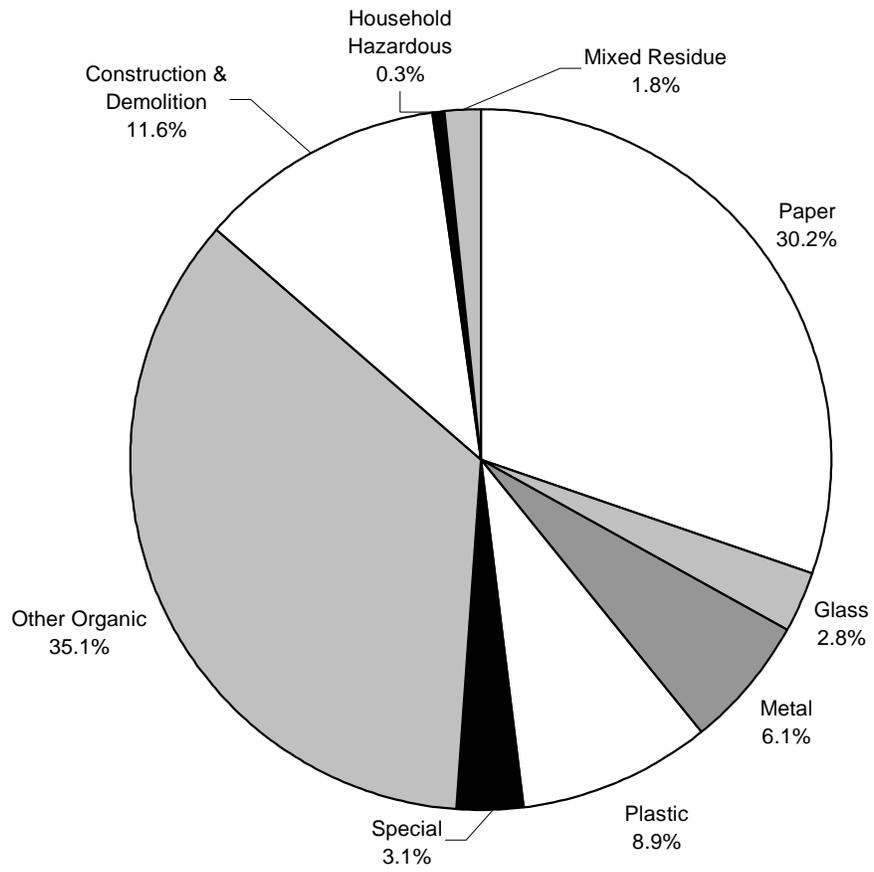


Table 4: Most Prevalent Materials in the Overall Waste Stream

Material Type	Est. Pct.	Est. Tons	Cumulative Pct.
Food	15.7%	5,584,506	15.7%
Remainder/Composite Paper	9.6%	3,416,281	25.3%
Leaves & Grass	7.9%	2,808,692	33.2%
Remainder/Composite Organic	6.9%	2,453,912	40.1%
Lumber	4.9%	1,746,001	45.1%
Uncoated Corrugated Cardboard	4.6%	1,630,348	49.6%
Other Miscellaneous Paper	4.4%	1,565,454	54.0%
Newspaper	4.3%	1,521,186	58.3%
Film Plastic	3.9%	1,377,438	62.2%
Other Ferrous Metal	2.4%	866,716	64.6%

Any differences between *cumulative percent* figures and the sum of *estimated percent* figures are due to rounding.

Table 5: Composition of Overall Waste Stream

	Est. Pct.	+ / -	Est. Tons		Est. Pct.	+ / -	Est. Tons
Paper	30.2%		10,742,707	Other Organic	35.1%		12,490,171
Uncoated Corrugated Cardboard	4.6%	0.2%	1,630,348	Food	15.7%	0.6%	5,584,506
Paper Bags	0.7%	0.0%	261,563	Leaves & Grass	7.9%	0.7%	2,808,692
Newspaper	4.3%	0.3%	1,521,186	Prunings & Trimmings	2.2%	0.4%	790,727
White Ledger Paper	2.3%	0.2%	812,752	Branches & Stumps	0.1%	0.1%	52,940
Colored Ledger Paper	0.2%	0.0%	60,270	Agricultural Crop Residues	0.0%	0.0%	1,765
Computer Paper	0.3%	0.1%	114,545	Manures	0.1%	0.1%	49,291
Other Office Paper	1.7%	0.2%	591,080	Textiles	2.1%	0.3%	748,336
Magazines and Catalogs	1.9%	0.1%	669,434	Remainder/Composite Organic	6.9%	0.5%	2,453,912
Phone Books and Directories	0.3%	0.1%	99,793				
Other Miscellaneous Paper	4.4%	0.2%	1,565,454	Construction & Demolition	11.6%		4,110,526
Remainder/Composite Paper	9.6%	0.4%	3,416,281	Concrete	1.2%	0.2%	418,600
				Asphalt Paving	0.1%	0.1%	49,614
Glass	2.8%		1,011,441	Asphalt Roofing	0.7%	0.2%	252,254
Clear Glass Bottles & Containers	1.4%	0.1%	506,214	Lumber	4.9%	0.5%	1,746,001
Green Glass Bottles & Containers	0.4%	0.1%	154,191	Gypsum Board	1.1%	0.2%	402,784
Brown Glass Bottles & Containers	0.5%	0.0%	167,529	Rock, Soil & Fines	1.3%	0.3%	461,437
Other Colored Glass Bottles & Containers	0.0%	0.0%	6,859	Remainder/Composite C&D	2.2%	0.3%	779,836
Flat Glass	0.1%	0.0%	23,206				
Remainder/Composite Glass	0.4%	0.1%	153,443	Household Hazardous Waste	0.3%		106,497
				Paint	0.1%	0.0%	42,167
Metal	6.1%		2,164,080	Vehicle & Equipment Fluids	0.0%	0.0%	13,596
Tin/Steel Cans	1.0%	0.1%	339,570	Used Oil	0.0%	0.0%	1,579
Major Appliances	0.1%	0.0%	23,257	Batteries	0.1%	0.0%	30,929
Other Ferrous Metal	2.4%	0.3%	866,716	Remainder/Composite HHW	0.1%	0.0%	18,226
Aluminum Cans	0.2%	0.0%	87,086				
Other Non-Ferrous Metal	0.3%	0.0%	93,548	Special Waste	3.1%		1,110,383
Remainder/Composite Metal	2.1%	0.3%	753,903	Ash	0.1%	0.0%	21,464
				Sewage Solids	0.0%	0.0%	0
Plastic	8.9%		3,161,711	Industrial Sludge	0.0%	0.0%	18
HDPE Containers	0.8%	0.0%	275,944	Treated Medical Waste	0.0%	0.0%	6,478
PETE Containers	0.5%	0.0%	160,615	Bulky Items	1.8%	0.6%	656,509
Miscellaneous Plastic Containers	0.7%	0.1%	239,954	Tires	0.4%	0.2%	145,899
Film Plastic	3.9%	0.2%	1,377,438	Remainder/Composite Special Waste	0.8%	0.3%	280,017
Durable Plastic Items	1.8%	0.2%	631,536				
Remainder/Composite Plastic	1.3%	0.1%	476,224	Mixed Residue	1.8%	0.2%	637,938
Sample count: 1,682				Totals	100.0%		35,535,453

Confidence intervals calculated at the 90% confidence level. Percentages for materials may not total 100% due to rounding.

Table 7: Statewide Tonnage and Percentage of Waste Stream by Sector 1

	Est. Percent of Waste Stream	+ / -	Est. Tons Statewide
Commercial	48.8%	2.8%	17,358,359
Residential	38.1%	3.0%	13,525,504
<i>Single-family residential</i>	28.0%	2.7%	9,955,739
<i>Multifamily residential</i>	10.0%	1.6%	3,569,888
Self-haul	13.1%	1.5%	4,651,591
<i>Commercial self-haul</i>	10.5%	1.4%	3,739,696
<i>Residential self-haul</i>	2.6%	0.4%	911,770
Totals	100.0%		35,535,453

Confidence intervals calculated at the 90% confidence level. Numbers may not total 100% due to rounding. Tonnages are based on 1998 tons reported, by region, through California's Disposal Reporting System.

¹ These figures were calculated based on vehicle surveys conducted in 1999 and applied to statewide tonnage as reported in 1998 through the CIWMB's Disposal Reporting System.

Figure 3: Overview of Commercial Waste

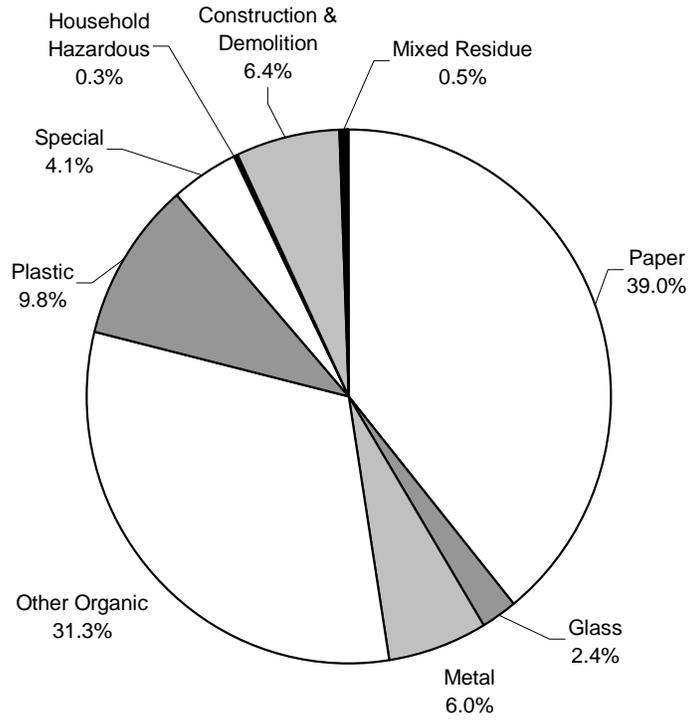


Table 15: Most Prevalent Materials in Commercial Waste

Material Type	Est. Pct.	Est. Tons	Cumulative Pct.
Food	16.3%	2,829,194	16.3%
Remainder/Composite Paper	13.2%	2,282,775	29.4%
Leaves & Grass	6.9%	1,205,147	36.4%
Uncoated Corrugated Cardboard	6.6%	1,137,254	42.9%
Other Miscellaneous Paper	5.0%	860,479	47.9%
Remainder/Composite Organic	4.6%	792,085	52.5%
Film Plastic	4.5%	772,721	56.9%
White Ledger Paper	4.2%	729,144	61.1%
Lumber	3.8%	658,061	64.9%
Newspaper	3.6%	629,836	68.5%

Any differences between *cumulative percent* figures and the sum of *estimated percent* figures are due to rounding.

Table 16: Composition of Commercial Waste

	Est. Pct.	+ / -	Est. Tons		Est. Pct.	+ / -	Est. Tons
Paper	39.0%		6,776,011	Other Organic	31.3%		5,437,472
Uncoated Corrugated Cardboard	6.6%	0.5%	1,137,254	Food	16.3%	1.0%	2,829,194
Paper Bags	0.7%	0.1%	121,339	Leaves & Grass	6.9%	1.0%	1,205,147
Newspaper	3.6%	0.3%	629,836	Prunings & Trimmings	1.1%	0.4%	197,398
White Ledger Paper	4.2%	0.5%	729,144	Branches & Stumps	0.0%	0.0%	2,103
Colored Ledger Paper	0.3%	0.0%	51,279	Agricultural Crop Residues	0.0%	0.0%	1,506
Computer Paper	0.6%	0.1%	109,639	Manures	0.3%	0.3%	49,291
Other Office Paper	2.4%	0.3%	420,616	Textiles	2.1%	0.5%	360,747
Magazines and Catalogs	2.3%	0.3%	393,755	Remainder/Composite Organic	4.6%	0.6%	792,085
Phone Books and Directories	0.2%	0.1%	39,896				
Other Miscellaneous Paper	5.0%	0.3%	860,479	Construction & Demolition	6.4%		1,118,116
Remainder/Composite Paper	13.2%	0.8%	2,282,774	Concrete	0.4%	0.2%	77,650
				Asphalt Paving	0.1%	0.1%	14,819
Glass	2.4%		417,841	Asphalt Roofing	0.0%	0.0%	675
Clear Glass Bottles & Containers	1.3%	0.1%	224,863	Lumber	3.8%	0.7%	658,061
Green Glass Bottles & Containers	0.3%	0.0%	43,951	Gypsum Board	0.4%	0.1%	69,970
Brown Glass Bottles & Containers	0.3%	0.1%	52,098	Rock, Soil & Fines	0.8%	0.2%	133,556
Other Colored Glass Bottles & Containers	0.0%	0.0%	4,483	Remainder/Composite C&D	0.9%	0.2%	163,386
Flat Glass	0.0%	0.0%	8,480				
Remainder/Composite Glass	0.5%	0.1%	83,965	Household Hazardous Waste	0.3%		56,828
				Paint	0.0%	0.0%	8,564
Metal	6.0%		1,043,196	Vehicle & Equipment Fluids	0.1%	0.1%	13,540
Tin/Steel Cans	0.9%	0.1%	147,891	Used Oil	0.0%	0.0%	660
Major Appliances	0.0%	0.0%	8,180	Batteries	0.1%	0.1%	20,238
Other Ferrous Metal	2.3%	0.4%	401,099	Remainder/Composite HHW	0.1%	0.0%	13,826
Aluminum Cans	0.2%	0.0%	35,236				
Other Non-Ferrous Metal	0.2%	0.0%	41,923	Special Waste	4.1%		716,524
Remainder/Composite Metal	2.4%	0.4%	408,868	Ash	0.1%	0.0%	12,122
				Sewage Solids	0.0%	0.0%	0
Plastic	9.8%		1,707,033	Industrial Sludge	0.0%	0.0%	18
HDPE Containers	0.7%	0.1%	114,828	Treated Medical Waste	0.0%	0.0%	2,756
PETE Containers	0.4%	0.0%	74,793	Bulky Items	2.4%	1.1%	418,530
Miscellaneous Plastic Containers	0.7%	0.1%	127,347	Tires	0.4%	0.2%	72,255
Film Plastic	4.5%	0.4%	772,721	Remainder/Composite Special Waste	1.2%	0.5%	210,844
Durable Plastic Items	1.9%	0.3%	325,297				
Remainder/Composite Plastic	1.7%	0.1%	292,047	Mixed Residue	0.5%	0.1%	85,338
Sample count: 1,207				Totals	100.0%		17,358,359

Confidence intervals calculated at the 90% confidence level. Percentages for materials may not total 100% due to rounding.

Composition by Industry Group

The study called for 1,200 commercial generator samples, which were allocated to 26 industry groups organized according to Standard Industrial Classification (SIC) codes (see Appendix E for definitions of these groups). The following industry groups were included:

- A - Finance / Insurance / Real Estate / Legal
- B - Retail Trade - Restaurants
- C - Retail Trade - Other
- D - Services - Other Misc.
- E - Wholesale Trade - Nondurable Goods
- F - Retail Trade - Automotive Dealers & Service Stations
- G - Services - Other Professional
- H - Retail Trade - Food Store
- I - Construction
- J - Services - Medical / Health
- K - Manufacturing - Printing / Publishing
- L - Services - Business Services
- M - Services – Education
- N - Public Administration
- O - Services - Hotels / Lodging
- P - Trucking & Warehousing
- Q - Wholesale Trade - Durable Goods
- R - Manufacturing - Other
- S - Transportation - Other
- T - Manufacturing - Electronic Equipment
- U - Manufacturing - Food / Kindred
- V - Manufacturing - Lumber & Wood Products
- W - Manufacturing - Transportation Equipment
- X - Retail Trade - Building Material & Garden
- Y - Manufacturing - Industrial / Machinery
- Z - AM Lumped Group

The last grouping, “Z - AM Lumped Group” includes several industry groups, each of which contributes relatively little to the state’s commercial waste stream. The lumped group includes the following industries:

- Z - Agriculture / Fisheries
- AA - Manufacturing - Instruments / Related
- AB - Communications
- AC - Manufacturing - Primary / Fabricated Metal
- AD - Manufacturing - Apparel / Textile
- AE - Manufacturing - Furniture / Fixtures
- AF - Services - Motion Pictures
- AG - Manufacturing - Chemical / Allied
- AH - Retail Trade - General Merchandise Store
- AI - Mining
- AJ - Transportation - Air
- AK - Utilities
- AL - Manufacturing - Paper / Allied
- AM - Forestry

In the [complete study](#), Tables 17 through 42 present the detailed composition results for each of the 26 industry groups; Table 12 shows the estimated average disposal volume and average waste density for each group; and Table 13 shows the estimated average per-employee disposal rate and estimated statewide disposal for each industry group considered in the study.

Figure 4: Overview of Overall Residential Waste

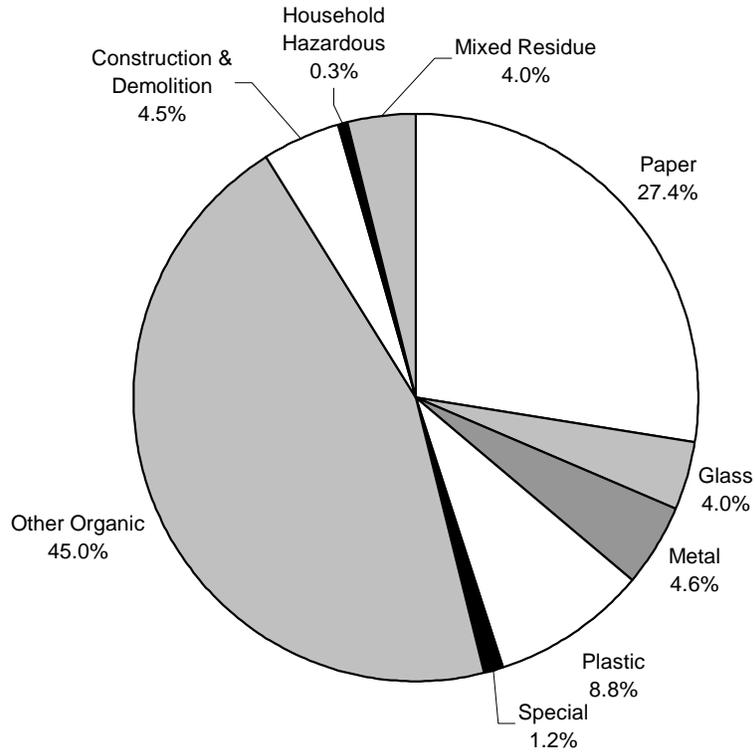


Table 43: Most Prevalent Materials in Overall Residential Waste

Material Type	Est. Pct.	Est. Tons	Cumulative Pct.
Food	20.0%	2,705,226	20.0%
Leaves & Grass	10.5%	1,417,730	30.5%
Remainder/Composite Organic	9.5%	1,282,074	40.0%
Remainder/Composite Paper	8.1%	1,090,003	48.0%
Newspaper	6.5%	880,581	54.5%
Other Miscellaneous Paper	4.8%	644,372	59.3%
Film Plastic	4.2%	570,893	63.5%
Mixed Residue	4.0%	541,223	67.5%
Uncoated Corrugated Cardboard	3.0%	403,930	70.5%
Prunings & Trimmings	2.5%	342,644	73.0%

Any differences between *cumulative percent* figures and the sum of *estimated percent* figures are due to rounding.

Table 44: Composition of Overall Residential Waste

	Est. Pct.	+ / -	Est. Tons		Est. Pct.	+ / -	Est. Tons
Paper	27.4%		3,712,747	Other Organic	45.0%		6,086,136
Uncoated Corrugated Cardboard	3.0%	0.2%	403,930	Food	20.0%	0.8%	2,705,226
Paper Bags	1.0%	0.1%	130,225	Leaves & Grass	10.5%	1.3%	1,417,730
Newspaper	6.5%	0.6%	880,581	Prunings & Trimmings	2.5%	0.6%	342,644
White Ledger Paper	0.6%	0.1%	80,509	Branches & Stumps	0.1%	0.0%	7,301
Colored Ledger Paper	0.1%	0.0%	8,821	Agricultural Crop Residues	0.0%	0.0%	0
Computer Paper	0.0%	0.0%	4,763	Manures	0.0%	0.0%	0
Other Office Paper	1.1%	0.1%	144,021	Textiles	2.4%	0.2%	331,161
Magazines and Catalogs	2.0%	0.2%	268,365	Remainder/Composite Organic	9.5%	0.6%	1,282,074
Phone Books and Directories	0.4%	0.1%	57,158				
Other Miscellaneous Paper	4.8%	0.2%	644,372	Construction & Demolition	4.5%		605,744
Remainder/Composite Paper	8.1%	0.3%	1,090,003	Concrete	0.2%	0.1%	29,554
				Asphalt Paving	0.0%	0.0%	2,756
Glass	4.0%		545,888	Asphalt Roofing	0.0%	0.0%	1,832
Clear Glass Bottles & Containers	2.0%	0.1%	271,318	Lumber	1.4%	0.3%	193,636
Green Glass Bottles & Containers	0.7%	0.1%	94,350	Gypsum Board	0.6%	0.3%	78,515
Brown Glass Bottles & Containers	0.8%	0.1%	113,183	Rock, Soil & Fines	1.3%	0.4%	174,761
Other Colored Glass Bottles & Containers	0.0%	0.0%	2,282	Remainder/Composite C&D	0.9%	0.2%	124,689
Flat Glass	0.0%	0.0%	4,248				
Remainder/Composite Glass	0.4%	0.1%	60,505	Household Hazardous Waste	0.3%		43,718
				Paint	0.2%	0.1%	29,643
Metal	4.6%		625,800	Vehicle & Equipment Fluids	0.0%	0.0%	50
Tin/Steel Cans	1.4%	0.1%	185,073	Used Oil	0.0%	0.0%	509
Major Appliances	0.0%	0.0%	0	Batteries	0.1%	0.0%	10,255
Other Ferrous Metal	1.1%	0.2%	153,360	Remainder/Composite HHW	0.0%	0.0%	3,262
Aluminum Cans	0.4%	0.0%	50,714				
Other Non-Ferrous Metal	0.3%	0.0%	38,764	Special Waste	1.2%		167,735
Remainder/Composite Metal	1.5%	0.3%	197,889	Ash	0.1%	0.0%	7,933
				Sewage Solids	0.0%	0.0%	0
Plastic	8.8%		1,196,514	Industrial Sludge	0.0%	0.0%	0
HDPE Containers	1.1%	0.1%	149,363	Treated Medical Waste	0.0%	0.0%	715
PETE Containers	0.6%	0.0%	83,734	Bulky Items	0.4%	0.2%	55,607
Miscellaneous Plastic Containers	0.8%	0.1%	109,747	Tires	0.3%	0.2%	36,607
Film Plastic	4.2%	0.2%	570,893	Remainder/Composite Special Waste	0.5%	0.1%	66,873
Durable Plastic Items	1.0%	0.1%	132,292				
Remainder/Composite Plastic	1.1%	0.1%	150,486	Mixed Residue	4.0%	0.4%	541,223
Sample count: 228				Totals	100.0%		13,525,504

Confidence intervals calculated at the 90% confidence level. Percentages for materials may not total 100% due to rounding.

Figure 5: Overview of Single-Family Residential Waste

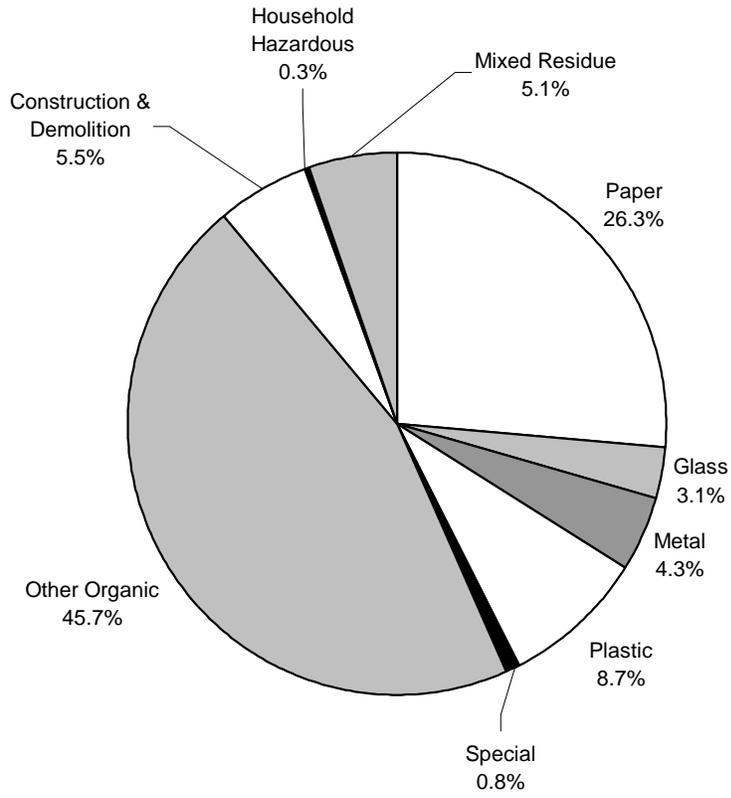


Figure 6: Overview of Multifamily Residential Waste

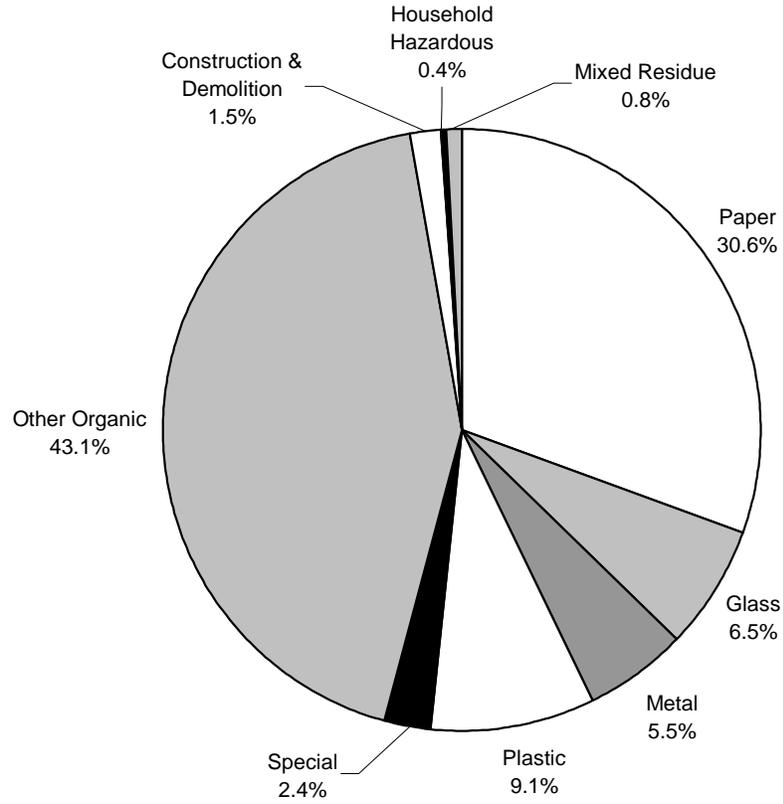


Figure 7: Overview of Overall Self-Haul Waste

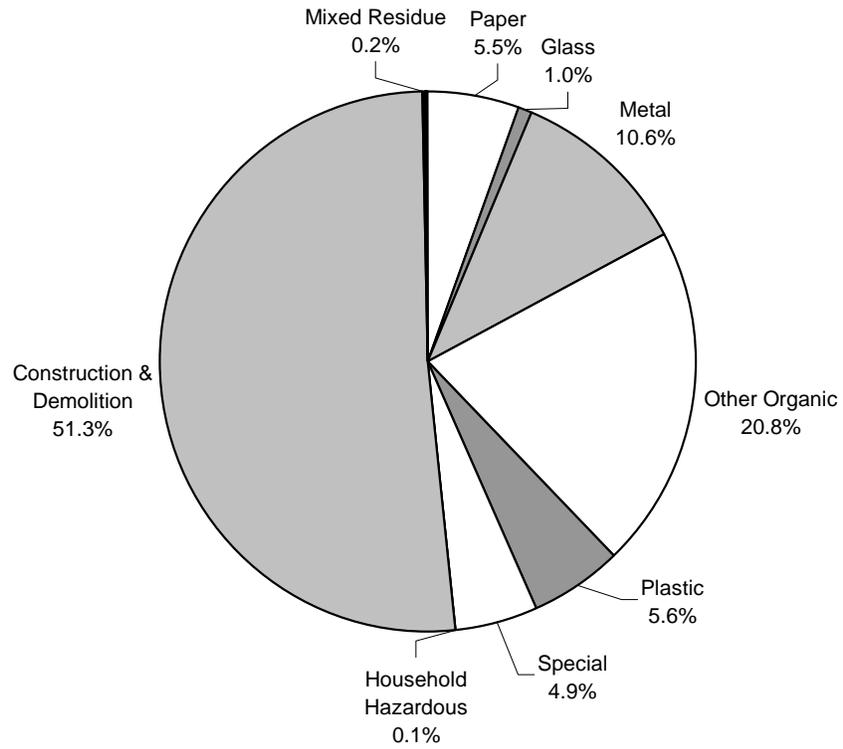


Table 52: Most Prevalent Materials in Overall Self-Haul Waste

Material Type	Est. Pct.	Est. Tons	Cumulative Pct.
Lumber	19.2%	894,304	19.2%
Remainder/Composite Construction & Demolition	10.6%	491,760	29.8%
Remainder/Composite Organic	8.2%	379,753	38.0%
Other Ferrous Metal	6.7%	312,257	44.7%
Concrete	6.7%	311,396	51.4%
Gypsum Board	5.5%	254,298	56.8%
Prunings & Trimmings	5.4%	250,685	62.2%
Asphalt Roofing	5.4%	249,748	67.6%
Leaves & Grass	4.0%	185,816	71.6%
Bulky Items	3.9%	182,372	75.5%

Any differences between *cumulative percent* figures and the sum of *estimated percent* figures are due to rounding.

Table 53: Composition of Overall Self-Haul Waste

	Est. Pct.	+ / -	Est. Tons		Est. Pct.	+ / -	Est. Tons
Paper	5.5%		253,949	Other Organic	20.8%		966,563
Uncoated Corrugated Cardboard	1.9%	0.3%	89,165	Food	1.1%	0.3%	50,086
Paper Bags	0.2%	0.1%	10,000	Leaves & Grass	4.0%	1.4%	185,816
Newspaper	0.2%	0.0%	10,768	Prunings & Trimmings	5.4%	1.7%	250,685
White Ledger Paper	0.1%	0.0%	3,099	Branches & Stumps	0.9%	0.4%	43,537
Colored Ledger Paper	0.0%	0.0%	170	Agricultural Crop Residues	0.0%	0.0%	259
Computer Paper	0.0%	0.0%	144	Manures	0.0%	0.0%	0
Other Office Paper	0.6%	0.3%	26,444	Textiles	1.2%	0.6%	56,428
Magazines and Catalogs	0.2%	0.0%	7,313	Remainder/Composite Organic	8.2%	2.5%	379,753
Phone Books and Directories	0.1%	0.0%	2,739				
Other Miscellaneous Paper	1.3%	0.4%	60,603	Construction & Demolition	51.3%		2,386,666
Remainder/Composite Paper	0.9%	0.2%	43,504	Concrete	6.7%	1.7%	311,396
				Asphalt Paving	0.7%	0.4%	32,040
Glass	1.0%		47,713	Asphalt Roofing	5.4%	1.7%	249,748
Clear Glass Bottles & Containers	0.2%	0.1%	10,032	Lumber	19.2%	2.2%	894,304
Green Glass Bottles & Containers	0.3%	0.3%	15,890	Gypsum Board	5.5%	1.4%	254,298
Brown Glass Bottles & Containers	0.0%	0.0%	2,247	Rock, Soil & Fines	3.3%	1.4%	153,120
Other Colored Glass Bottles & Containers	0.0%	0.0%	93	Remainder/Composite C&D	10.6%	2.2%	491,760
Flat Glass	0.2%	0.1%	10,478				
Remainder/Composite Glass	0.2%	0.1%	8,973	Household Hazardous Waste	0.1%		5,951
				Paint	0.1%	0.1%	3,960
Metal	10.6%		495,084	Vehicle & Equipment Fluids	0.0%	0.0%	6
Tin/Steel Cans	0.1%	0.1%	6,607	Used Oil	0.0%	0.0%	411
Major Appliances	0.3%	0.2%	15,077	Batteries	0.0%	0.0%	436
Other Ferrous Metal	6.7%	1.4%	312,257	Remainder/Composite HHW	0.0%	0.0%	1,138
Aluminum Cans	0.0%	0.0%	1,136				
Other Non-Ferrous Metal	0.3%	0.1%	12,861	Special Waste	4.9%		226,125
Remainder/Composite Metal	3.2%	0.9%	147,146	Ash	0.0%	0.0%	1,408
				Sewage Solids	0.0%	0.0%	0
Plastic	5.6%		258,164	Industrial Sludge	0.0%	0.0%	0
HDPE Containers	0.3%	0.1%	11,753	Treated Medical Waste	0.1%	0.1%	3,007
PETE Containers	0.0%	0.0%	2,088	Bulky Items	3.9%	1.2%	182,372
Miscellaneous Plastic Containers	0.1%	0.0%	2,860	Tires	0.8%	0.7%	37,037
Film Plastic	0.7%	0.1%	33,824	Remainder/Composite Special Waste	0.0%	0.0%	2,300
Durable Plastic Items	3.7%	1.1%	173,948				
Remainder/Composite Plastic	0.7%	0.3%	33,691	Mixed Residue	0.2%	0.1%	11,377
Sample count: 247				Totals	100.0%		4,651,591

Confidence intervals calculated at the 90% confidence level. Percentages for materials may not total 100% due to rounding.

Figure 8: Overview of Commercial Self-Haul Waste

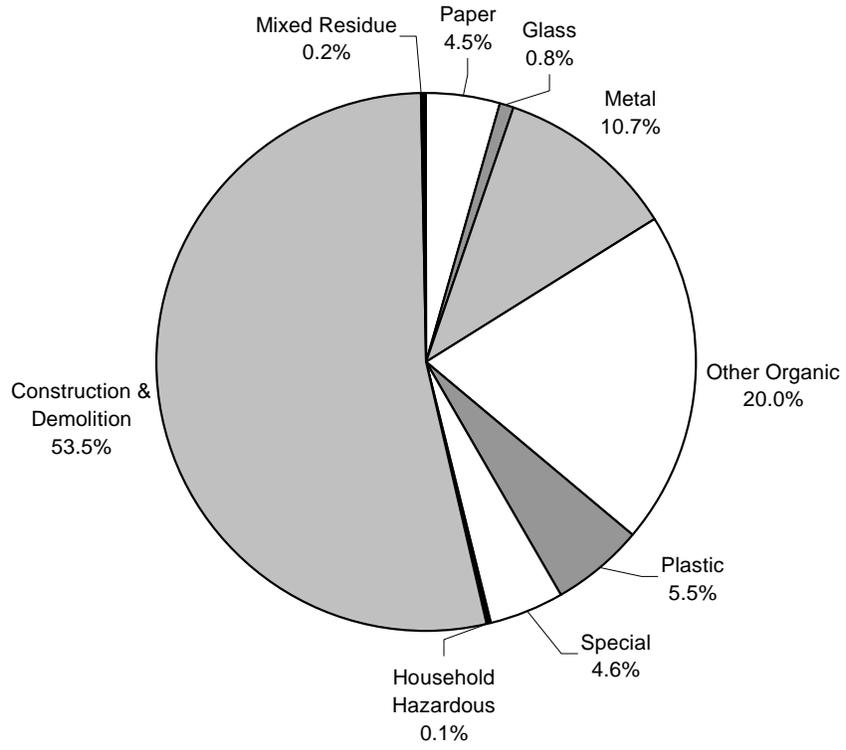


Figure 9: Overview of Residential Self-Haul Waste

