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July 1, 2019

David Gregory, Solid Waste Division Manager

Orange County

5901 Young Pine Road

Orlando, FL 32829

Dear David Gregory,

The attached report entitled, *Waste Composition of Orange County* documents the results of a one-week field study by your staff, temporary workers, and students and faculty of the University of Florida. The data from this study will be used to update the Florida Department of Environmental Protection's *WasteCalc* computer program. Thank you tremendously for your help and allowing us to use Orange County Solid Waste Division facilities in our recent waste composition study. The members of the Orange County team were wonderful and crucial for completing the study. This study was essential to updating the Florida Department of Environmental Protection's tool WasteCalc. As no previous waste composition study existed for Orange County, this study was crucial for the accuracy of WasteCalc. Orange County is a heavily populated county and an accurate representation of the waste composition in the county is necessary.

Multiple people from Orange County deserve recognition for their contribution to this study. Ray Bilodeau was incredibly organized as he took time to make sure samples were randomized but still represented the entire county's waste stream. Mr. Bilodeau's knowledge and planning truck arrivals and monitoring sample handling was extremely beneficial to the project efficiency. Additionally, the Orange County employees, Tevaris, Saul, Phillip, and Ashanti, were extremely hardworking and a delight to have around. They did not sign up for the dirty work of sorting samples, but we eager to help us complete the study. The employees, Juan and Shane, were also very helpful! They kept the provided an efficient system for sample delivery and kept samples organized. Additionally, members like Allan Cole and Marchelle Allen, were essential to helping us complete the project. Marchelle coordinated temporary workers, an important aspect in conducting a large scale project. Allan provided truck route information that is of great help to our future report writing and research endeavors. Last, but not least, we would like to extend a heavy thank you to David Reed and Patrick for all of their efforts during the week. They provided a safe working environment

and were quick to help with any tasked asked of them. We are extremely grateful for their oversight and attentiveness.

Thank you again for making the first stop on a three week trip of waste composition studies run smoothly!

Sincerely,

Timothy Townsend, Ph.D., P. E.

Professor

WASTE COMPOSITION OF ORANGE COUNTY

June 2019

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Orange County

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EXECUTIVE SUMMARY

The week of April 29th, 2019 through May 4th, 2019, the University of Florida Department of Environmental Engineering Sciences performed a waste composition study at the Waste Management Materials Recovery Facility (MRF), which is located at the Orange County Landfill. This study was funded by both Orange County and the Florida Department of Environmental Protection (FDEP). The goals of this project were to: 1) provide Orange County with a current evaluation of their municipal solid waste (MSW) composition; and 2) update FDEP's solid waste composition online tool called WasteCalc because it relies on current waste composition studies to calculate the material composition of MSW for each of Florida's 67 counties.

The first step in conducting this waste composition was to plan out a sampling method. This stage included determining the number of samples to be sorted (40 samples) and deciding upon which trucks to sample. A proportional mix of commercial and residential trucks were to be sampled. Incoming garbage trucks were randomly selected from each commercial and residential category until the desired number of samples were acquired. A 200 to 300 pound sample was obtained from each truck, and each sample was sorted into 39 different categories by researchers and a group of temporary workers. After the sample was sorted, each category bin was weighed and the contents were discarded.

After collecting the material weight data, the UF team calculated the mass fraction for every category in each individual sample. Then, the mass fractions for the category were averaged for all 40 samples. These ratios were then converted to percentages to find the greatest contributor to Orange County's MSW stream. The results found "Other Paper" to be the largest component of this particular waste stream at 19.7%. Typical contents placed into this category include soiled paper (e.g. napkins, paper towels, and tissues), pizza boxes, and glossy paper.

The results of the Orange County waste composition will be integrated into WasteCalc to provide more accurate and representative results for this county and other county's with similar population densities.

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ABBREVIATIONS AND ACRONYMS

C&D debris	Construction and demolition debris
EPA	U.S. Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
MRF	Material recovery facility
MSW	Municipal solid waste
SMM	*Sustainable materials management*
YT	Yard trash

1 INTRODUCTION

1.1 Municipal Solid Waste in Orange County

Orange County has five municipal solid waste (MSW) collection zones as shown in Figure 1 below. The three primary haulers for the county are Advanced Disposal Services, Inc., FCC, and Waste Pro USA Inc.. Advanced Disposal Services Inc. works primarily in Zone 1 and Zone 3, Waste Pro USA Inc. operates in Zone 2, and FCC hauls in Zone 4 and Zone 5. Orange County operates the County Landfill which contains separate disposal units for Class I and Class III waste. Orange County operates two transfer stations located within the county; the Porter Transfer Station and the McLeod Road Transfer Station. Orange County has suburban areas, the city of Orlando, which continues to grow rapidly, as well as rural areas on the outskirts of the county. As a result, the waste stream includes a mixture of waste from various businesses, restaurants, and different types of homes (i.e., apartment complexes, single-family homes).

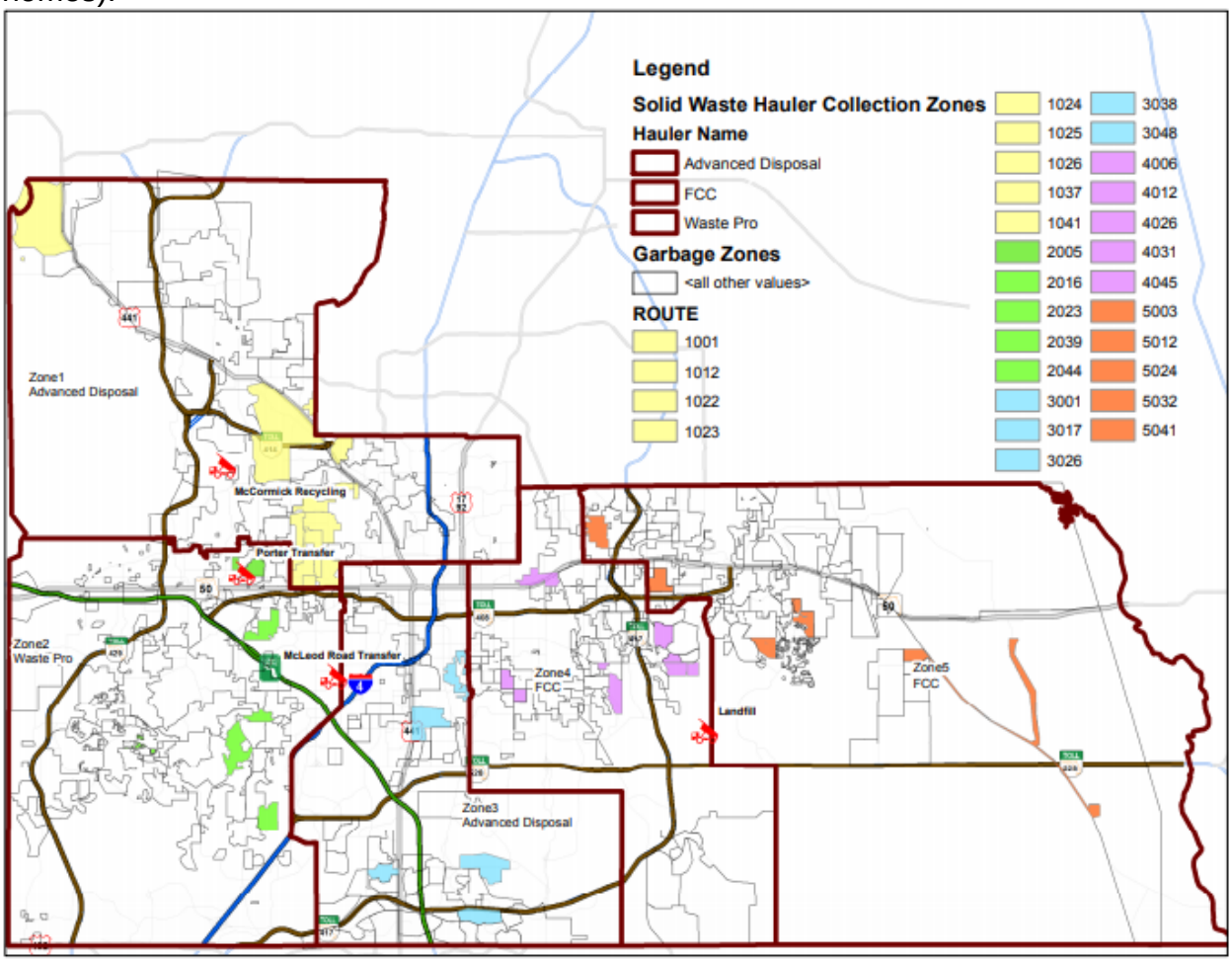


Figure 1. Solid Waste Zones of Orange County.

1.2 Location of Study

As seen in Figure 1, the landfill in Orange County is on the border of Zone 4 and Zone 5 and is a short distance from Zone 3. The surrounding areas of the landfill are very diverse in population. More of the surrounding area south of the landfill is more rural, which represents the areas of the county that exhibit similar characteristics. Additionally, there were many neighborhoods and suburban areas adjacent to the landfill site. Therefore, the waste coming into the landfill could be easily separated by composition (residential or commercial) and location, allowing the data to represent the entire county. At the county landfill, there was space and resources to accommodate the study, so it was the most fitting location to conduct the research.

2 METHODOLOGY

2.1 Preparation

It was determined for logistical reasons that 40 samples was the most reasonable number of samples that could be collected in the week-long study. Many of the previous waste composition studies reviewed for this study were performed using 40 samples per week. A study by the Luled University of Technology in Sweden suggests the minimum number of samples that are necessary to achieve statistical significance is 10 and states it is not realistic to take more than 40 samples for a weeklong sampling period[1].

Once 40 samples were agreed upon, the level of confidence and precision were calculated using the sample calculation equation, as seen below in Equation 1, written in the ASTM D5231 method (Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste, ASTM International, 2016). To find the estimated mean and standard deviation, the annual MSW tonnages reported in 2017 to FDEP by each county were inputted into the 2018 version of WasteCalc. WasteCalc generated the most prevalent component of the waste stream, which was used to estimate the standard deviation and the mean by using the tables in the ASTM method (see section 5.1. ASTM Tables for Calculating sample size). WasteCalc reported “Other Plastic” as the largest component of the waste stream for 2017 in Orange County.

$$n = \left(\frac{t * s}{e * x}\right)^2 \qquad (1)$$

Where:

n=number of calculated samples

t=student t statistic corresponding to the desired level of confidence

s=estimated standard deviation

e=desired level of precision

x=estimated mean

After the largest component was identified, it was determined that a sample size of 40 would result in an 85% confidence level and precision level (e) of 0.15.

To divide the samples between commercial and residential MSW, Equation 2 was used for each of the studies. For this study's purpose, commercial included any standard commercial facility and any multifamily residential facility (e.g., apartment complexes, condominiums). Residential strictly included single-family residential curbside pick-up. The study required 13 commercial samples and 27 residential samples in Orange County.

After identifying the number of samples, the researchers coordinated efforts with Orange County Landfill. First, the UF team went to the Orange County Landfill to discuss logistics and understand what resources would be available to use while performing the sort. It was determined that the sort would be conducted in the Materials Recovery Facility (MRF) on the same site of the landfill. Orange County assisted in the sort by providing operators and equipment to retrieve, transport, and dispose of samples.

2.2 Sampling Method

Three to four commercial trucks and four to five residential trucks from each zone for a total of approximately eight trucks per day were sampled. As residential (automated collection vehicles) or commercial (typically front-load vehicles) garbage trucks entered the scale house they were directed to a specified area of the landfill where the samples were obtained.

An Orange County employee conducted interviews with each incoming truck driver regarding information on where the particular load came from and what it might contain. Notes about the interview, the tare weight of the pickup, and the total weight of the pickup were recorded for each truck on a sample sheet (see section 5.2. Sampling Sheet). To retrieve a sample, the load from the truck was emptied and then mixed up by a bull-dozer following the cone and quartering method specified in the ASTM method. Then, a 200 to 300 pound sample was loaded into the back of a pickup truck lined with a tarp and brought to the MRF to be placed on the MRF floor as seen in Figure 2.

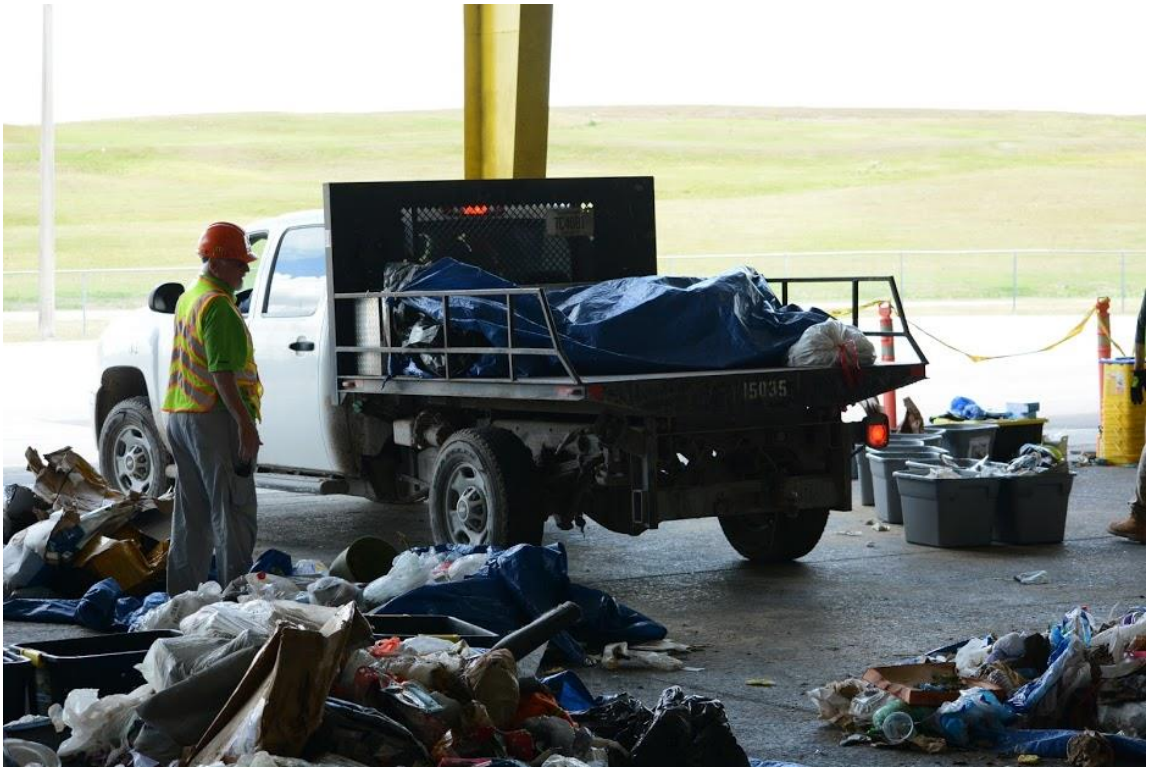


Figure 2. Transportation and Delivery of a sample.

2.3 Sorting Method

After the pickup delivered the sample, the sorting team used shovels to load the sample into bins. The bins were brought to the scale in the MRF, weighed until the contents of the bins reached 200 pounds or more, dumped on the sorting table, and sorted into 39 categories (shown in Table 1).

Table 1. List of Categories used in the Orange County Waste Composition

1	Newspaper	21	Clear Glass
2	Corrugated Cardboard (OCC)	22	Brown Glass
3	High Grade Paper (Office type)	23	Aluminum Cans/ Foil
4	Polycoated aseptic containers	24	Steel/Tin cans
5	Food service container (polycoated)	25	Other Ferrous Metals
6	Other Composite (metal coated)	26	Other Non- Ferrous
7	Boxboards	27	Yard waste
8	Other Paper	28	Food waste
9	#1 PET bottles	29	Animal By-Product
10	#2 HDPE bottles- translucent	30	Other Organics
11	#2 HDPE bottles- colored	31	Wood
12	#3-#7 (Other plastic bottles)	32	Asphalt shingles
13	Expanded Polystyrene (food service)	33	gypsum drywall
14	Expanded Polystyrene	34	concrete/bricks
15	Rigid Plastic (tubs, cups,lids)	35	Rubber and Leather
16	Rigid Plastic (food service plastics)	36	Clothing, Footwear, other textiles
17	Grocery Bags	37	Small appliances/ Electronics
18	Other Flexible Plastic	38	Hazardous waste
19	Other Plastics	39	Residuals
20	Green Glass		

The table that was used had a 2 inch by 2 inch metal screen on top. This allowed any residue smaller than 2 inches by 2 inches to fall through the table. Note the residue was not sorted into the 39 categories but was accounted for in its own category called “Residuals”. Also, if any bulky items were picked up, it was noted on the sample observation sheet. Figures 3-5 present the setup of the sorting process.

Figure 3. Set-up of Orange County Waste Composition.

Figure 4. Sorting Table with a sample.

Figure 5. Examples of different category bins. Category 28, Food Waste, is on the left. Category 18, Other Flexible Plastic, is on the right.

After the table was cleared of all garbage, the 39 different category bins were weighed one-by-one on the scale. After the weight had been recorded (see section 5.3. Data Collection Sheet), the contents of the bins were discarded into a roll-off container inside the MRF, which was emptied in the landfill every two days or so.

3 DATA AND RESULTS

3.1 Raw Data Collected

Raw data refers to the fact that this data is presented in the 39 categories decided upon by the UF team. The next section puts these categories into broader categories in order to give a general breakdown of the MSW stream. Each table in this section is color-coded to match the general category it falls under in section 3.2.

The percentages were based on the averages of the mass fraction for each category. The equations used, as seen below, follow the ASTM D5231 method. In order to take the individual mass fraction of each category in an individual sample Equation 3 was used.

$$mf_i = \frac{w_i}{\sum_{i=1}^{j} w_i} * 100 \qquad (3)$$

Where:

$$mf_i = mass\ fraction\ of\ component\ i$$

$$w_i = \text{weight of component i}$$

$$\text{j} = \text{number of components}$$

After each mass fraction was calculated, the average of the mass fractions for all 40 samples for the category was taken and multiplied by 100 to obtain a percentage, as seen in Equation 4 and 5.

$$\bar{\text{m}}f_i = (\frac{1}{n}\sum_{k=1}^{n}(mf_i)_k) \quad (4)$$

$$Category\ Percentage = \bar{\text{m}}f_i * 100 \quad (5)$$

Where:

$$\bar{\text{m}}f_i = \text{mean mass fraction}$$

Raw data from the Orange County waste sort is shown in Table 2. The total waste stream, commercial samples, and residential samples were recorded. To divide the samples into commercial and residential, the data sheets were cross referenced with the sample sheets to see what they were designated as by the interviewer.

Table 2. Raw Data Collected in Orange County.

Sample	Category	Percentage (%)		
		Total	Commercial	Residential
1	Newspaper	0.3	0.4	0.3
2	Corrugated Cardboard (OCC)	5.7	11.8	2.8
3	High Grade Paper (Office type)	1.4	1.9	1.1
4	Polycoated aseptic containers	0.5	0.7	0.4
5	Food service container (polycoated)	1.1	1.7	0.8
6	Other Composite (metal coated)	0.5	0.9	0.3
7	Boxboards	2.2	2.3	2.2
8	Other Paper	15.4	11.2	17.3
9	#1 PET bottles	2.7	3.3	2.4
10	#2 HDPE bottles- translucent	0.5	0.5	0.5
11	#2 HDPE bottles- colored	0.4	0.5	0.4
12	#3-#7 (Other plastic bottles)	0.2	0.2	0.2
13	Expanded Polystyrene (food service)	0.8	1.1	0.6
14	Expanded Polystyrene	0.9	0.7	1.0
15	Rigid Plastic (tubs, cups,lids)	1.5	1.2	1.7
16	Rigid Plastic (food service plastics)	1.1	1.1	1.2
17	Grocery Bags	1.6	0.9	2.0
18	Other Flexible Plastic	7.9	9.7	7.1
19	Other Plastics	5.2	4.8	5.3
20	Green Glass	0.7	0.7	0.7
21	Clear Glass	2.1	1.3	2.5
22	Brown Glass	0.8	1	0.7
23	Aluminum Cans/ Foil	1.1	1.2	1.1
24	Steel/Tin cans	0.8	0.5	0.9
25	Other Ferrous Metals	1.3	0.6	1.6
26	Other Non- Ferrous	0.5	0.2	0.6
27	Yard waste	2.8	0.3	4.0
28	Food waste	10.2	10.3	10.2
29	Animal By-Product	1.8	1.6	1.9
30	Other Organics	3.4	2.3	3.9
31	Wood	1.9	3.6	1.1
32	Asphalt shingles	0.1	0.0	0.2
33	gypsum drywall	0.0	0.0	0.0
34	concrete/bricks	0.6	0.4	0.6
35	Rubber and Leather	0.9	1.7	0.6
36	Clothing, Footwear, other textiles	6.8	5.8	7.2
37	Small appliances/ Electronics	2.1	2.3	2.0
38	Hazardous waste	1.0	1.2	0.9
39	Residuals	11.2	10.2	11.7

3.2 Processed Data

Data presented in this section has been complied into more general categories. The colors in the tables correspond to the colors from the tables in section 3.1. Categories highlighted in Table 2 were compiled into the general categories with the same highlighted color, as seen below in the tables below. For example, the categories from the conducted study entitled “Other Paper”, “Polycoated Aseptic Containers”, “Food Service Containers”, “Other Composite”, and “Boxboards” were compiled into the general category “Other Paper”.

Processed data from the Orange County waste sort is shown in Table 3 below. Graphical representations of each waste sort can be found in Figures 6-8.

Table 3. Processed Data in Orange County

	Percentage (%)		
WasteCalc Categories	Total	Commercial	Residential
Newspaper	0.3	0.4	0.3
Glass	3.6	3	3.9
Aluminum Cans	1.1	1.2	1.1
Plastic Bottles	3.8	4.5	3.5
Steel Cans	0.8	0.5	0.9
Corrugated Paper	5.7	11.8	2.8
Office Paper	1.4	1.9	1.1
Yard Trash	2.8	0.3	4
Other Plastics	19	19.5	18.9
Ferrous Metals	1.3	0.6	1.6
Non-Ferrous Metals	0.5	0.2	0.6
Other Paper	19.7	16.8	21
Textiles	6.8	5.8	7.2
C&D Debris	2.6	4	1.9
Food	10.2	10.3	10.2
Miscellaneous	20.4	19.3	21
White Goods	0	0	0
Tires	0	0	0

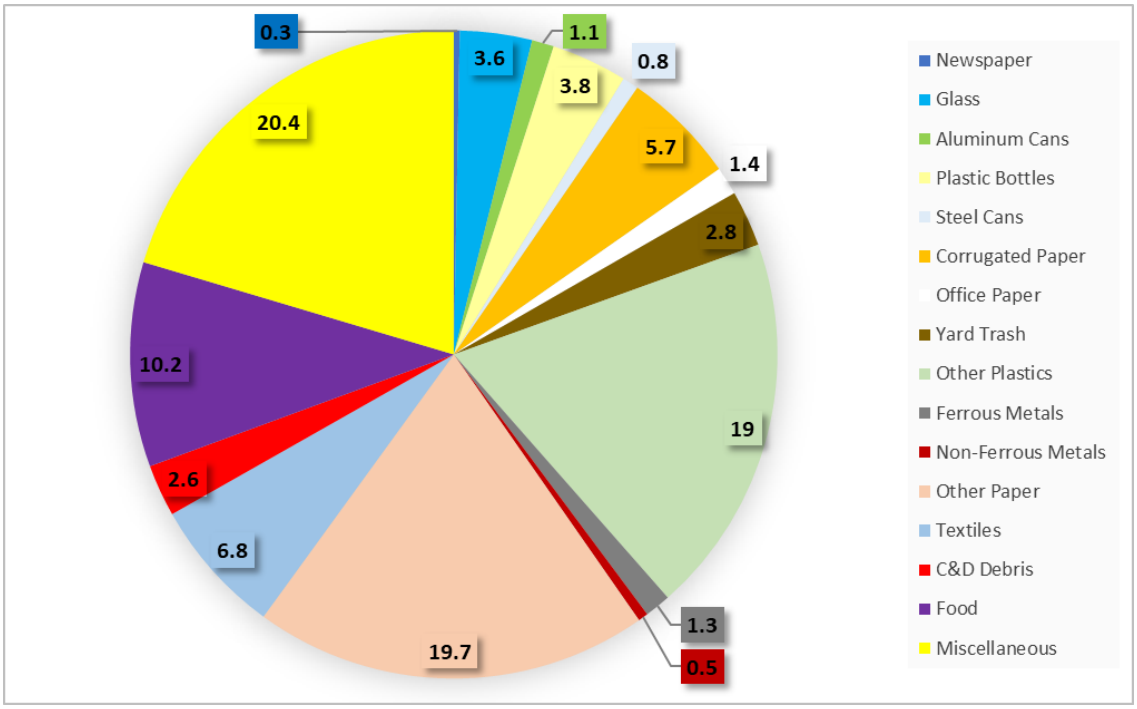


Figure 6. Representation of Total Waste Collected.

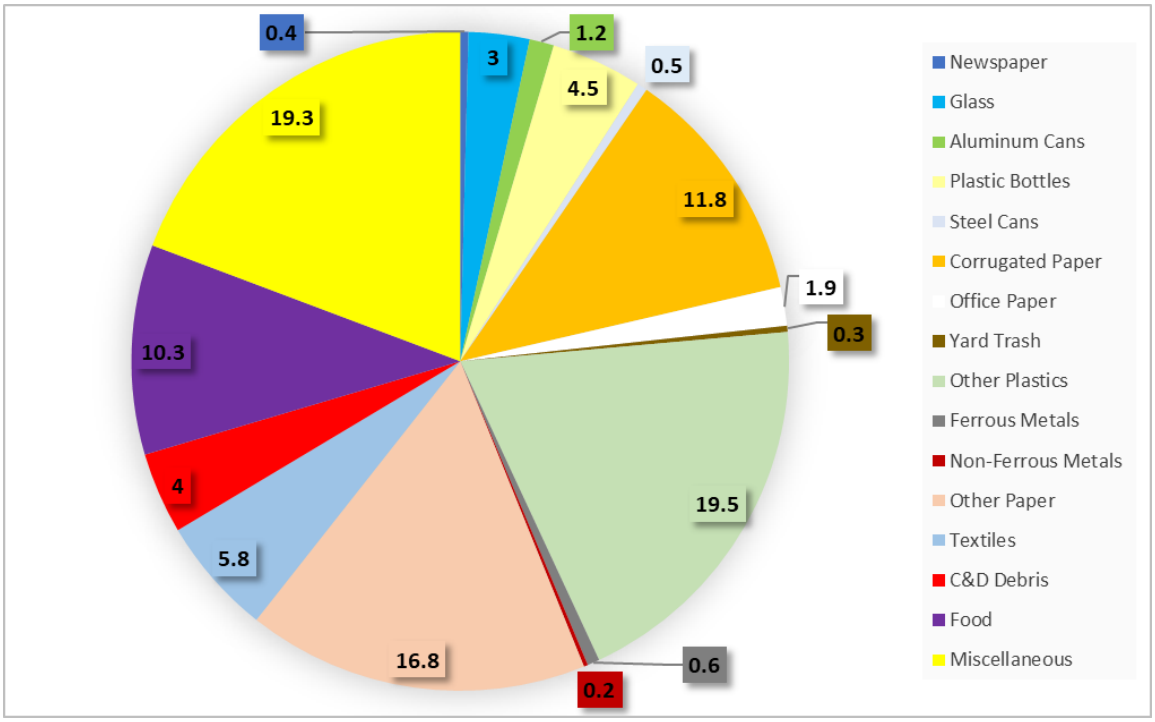


Figure 7. Representation of Commercial Waste Collected.

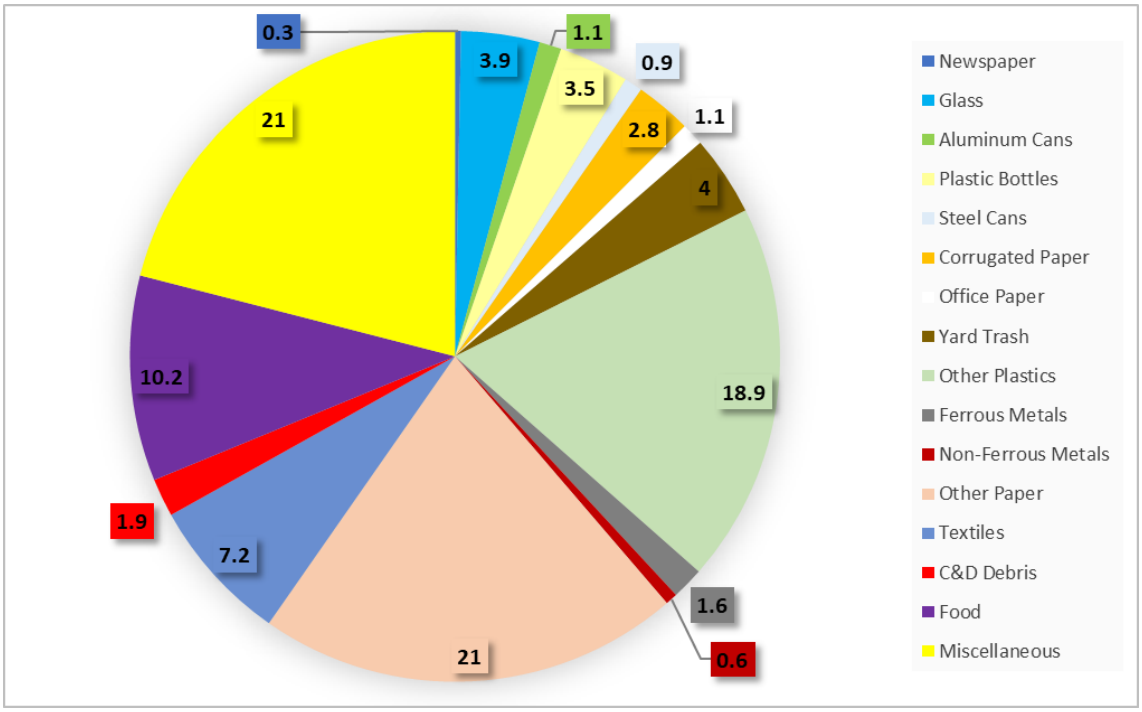


Figure 8. Representation of Residential Waste Collected.

3.3 Overview of Results

The highest component of the MSW stream in the Orange County was “Other Paper” at 19.7%. Contents typical in “Other Paper” were polycoated aseptic containers, composite paper products, boxboards, glossy paper, soiled napkins, and pizza boxes. In the US Environmental Protection Agency’s (EPA) *Advancing Sustainable Material Management: 2015 Fact Sheet*, the highest component of US MSW in 2015 was “Other Paper” at 26%. Orange County seems to have a consistent outcome with a significant portion of the country. The lowest component in this study was “Newspaper” at 0.3%. Materials that can be recycled, including glass, aluminum cans, steel cans, plastic bottles, corrugated boxes, newspaper, and office paper are classified as recyclables. The percentage from each of these categories were summed to make a recyclable category. Approximately 16.7% of the MSW stream consists of recyclable material.

“Other Plastics” is the highest component of the commercial MSW stream while “Other Paper” is the highest component of the residential MSW stream. The lowest component in the commercial stream is “Non-ferrous metals” at 0.2%. The lowest component in the residential stream is “Newspaper” at 0.3%.

4 CONCLUSION

Results of the Orange County waste composition study can now be incorporated into the WasteCalc program. WasteCalc is an online tool created by FDEP and outside contractors that allow any county in Florida to input information about the amount of waste landfilled, recycled, and combusted. Currently, many counties in Florida have not had a recent or any waste composition studies conducted. When this occurs,

WasteCalc generates the material composition percentages based on counties that are similar in population density to that specific county. However, it is important to conduct waste composition studies in various counties so that WasteCalc can provide the counties with more accurate and representative information. This data obtained in this study will provide more accurate results for this county and counties similar to Orange County. The information provided may also help to make decisions about sustainable materials management in the future in Orange County.

5 APPENDIX

5.1 ASTM Tables for calculating sample size

TABLE 3 Values of Mean ($\bar{x}$) and Standard Deviation(s) for Within-Week Sampling to Determine MSW Component Composition[A]

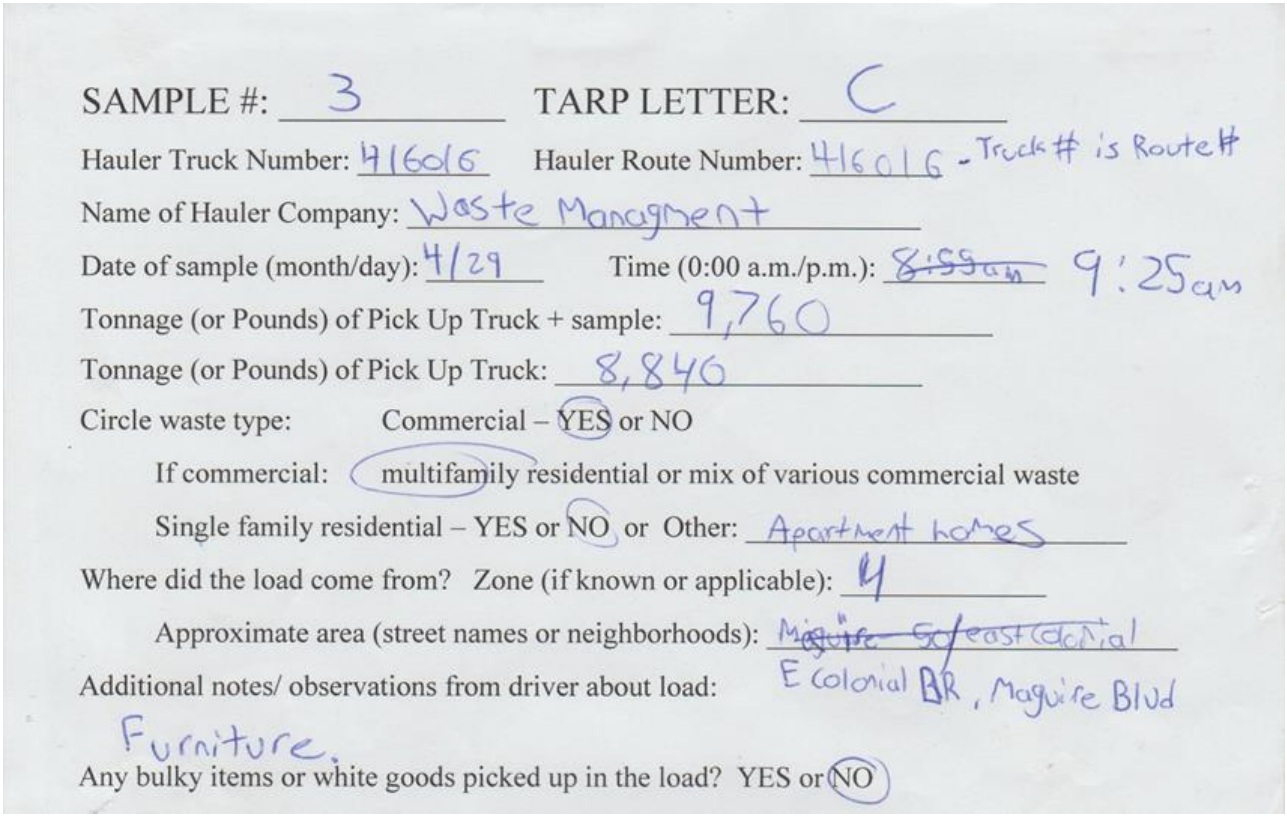
Component	Standard Deviation(s)	Mean ($\bar{x}$)
Newsprint	0.07	0.10
Corrugated	0.06	0.14
Plastic	0.03	0.09
Yard waste	0.14	0.04
Food waste	0.03	0.10
Wood	0.06	0.06
Other organics	0.06	0.05
Ferrous	0.03	0.05
Aluminum	0.004	0.01
Glass	0.05	0.08
Other inorganics	0.03	0.06
		1.00

[A]The tabulated mean values and standard deviations are estimates based on field test data reported for MSW sampled during weekly sampling periods at several locations around the United States.

t-distribution

	Confidence Level									
	60%	70%	80%	85%	90%	95%	98%	99%	99.8%	99.9%
	Level of Significance									
2 Tailed	0.40	0.30	0.20	0.15	0.10	0.05	0.02	0.01	0.002	0.001
1 Tailed	0.20	0.15	0.10	0.075	0.05	0.025	0.01	0.005	0.001	0.0005
df										
1	1.376	1.963	3.133	4.195	6.320	12.69	31.81	63.67	—	—
2	1.060	1.385	1.883	2.278	2.912	4.271	6.816	9.520	19.65	26.30
3	0.978	1.250	1.637	1.924	2.352	3.179	4.525	5.797	9.937	12.39
4	0.941	1.190	1.533	1.778	2.132	2.776	3.744	4.596	7.115	8.499
5	0.919	1.156	1.476	1.699	2.015	2.570	3.365	4.030	5.876	6.835
6	0.906	1.134	1.440	1.650	1.943	2.447	3.143	3.707	5.201	5.946
7	0.896	1.119	1.415	1.617	1.895	2.365	2.999	3.500	4.783	5.403
8	0.889	1.108	1.397	1.592	1.860	2.306	2.897	3.356	4.500	5.039
9	0.883	1.100	1.383	1.574	1.833	2.262	2.822	3.250	4.297	4.780
10	0.879	1.093	1.372	1.559	1.813	2.228	2.764	3.170	4.144	4.586
11	0.875	1.088	1.363	1.548	1.796	2.201	2.719	3.106	4.025	4.437
12	0.873	1.083	1.356	1.538	1.782	2.179	2.682	3.055	3.930	4.318
13	0.870	1.079	1.350	1.530	1.771	2.160	2.651	3.013	3.852	4.221
14	0.868	1.076	1.345	1.523	1.761	2.145	2.625	2.977	3.788	4.141
15	0.866	1.074	1.341	1.517	1.753	2.131	2.603	2.947	3.733	4.073
16	0.865	1.071	1.337	1.512	1.746	2.120	2.584	2.921	3.687	4.015
17	0.863	1.069	1.333	1.508	1.740	2.110	2.567	2.899	3.646	3.965
18	0.862	1.067	1.330	1.504	1.734	2.101	2.553	2.879	3.611	3.922
19	0.861	1.066	1.328	1.500	1.729	2.093	2.540	2.861	3.580	3.884
20	0.860	1.064	1.325	1.497	1.725	2.086	2.529	2.846	3.552	3.850
21	0.859	1.063	1.323	1.494	1.721	2.080	2.518	2.832	3.528	3.820
22	0.858	1.061	1.321	1.492	1.717	2.074	2.509	2.819	3.505	3.792
23	0.857	1.060	1.319	1.489	1.714	2.069	2.500	2.808	3.485	3.768
24	0.857	1.059	1.318	1.487	1.711	2.064	2.493	2.797	3.467	3.746
25	0.856	1.058	1.316	1.485	1.708	2.060	2.486	2.788	3.451	3.725
26	0.856	1.058	1.315	1.483	1.706	2.056	2.479	2.779	3.435	3.707
27	0.855	1.057	1.314	1.482	1.703	2.052	2.473	2.771	3.421	3.690
28	0.855	1.056	1.313	1.480	1.701	2.048	2.468	2.764	3.409	3.674
29	0.854	1.055	1.311	1.479	1.699	2.045	2.463	2.757	3.397	3.660
30	0.854	1.055	1.310	1.477	1.697	2.042	2.458	2.750	3.386	3.646
40	0.851	1.050	1.303	1.468	1.684	2.021	2.424	2.705	3.307	3.551
50	0.849	1.047	1.299	1.462	1.676	2.009	2.404	2.678	3.262	3.496
60	0.848	1.045	1.296	1.458	1.671	2.000	2.391	2.661	3.232	3.460
70	0.847	1.044	1.294	1.456	1.667	1.994	2.381	2.648	3.211	3.435
80	0.846	1.043	1.292	1.453	1.664	1.990	2.374	2.639	3.196	3.417
90	0.846	1.042	1.291	1.452	1.662	1.987	2.369	2.632	3.184	3.402
100	0.845	1.042	1.290	1.451	1.660	1.984	2.365	2.626	3.174	3.391
∞	0.842	1.036	1.282	1.440	1.645	1.960	2.327	2.576	3.091	3.291

5.2 Sampling Sheet



SAMPLE #: 3 TARP LETTER: C

Hauler Truck Number: 416016 Hauler Route Number: 416016 - Truck # is Route #

Name of Hauler Company: Waste Managment

Date of sample (month/day): 4/29 Time (0:00 a.m./p.m.): ~~8:55 am~~ 9:25 am

Tonnage (or Pounds) of Pick Up Truck + sample: 9,760

Tonnage (or Pounds) of Pick Up Truck: 8,840

Circle waste type: Commercial – YES or NO

If commercial: multifamily residential or mix of various commercial waste

Single family residential – YES or NO or Other: Apartment homes

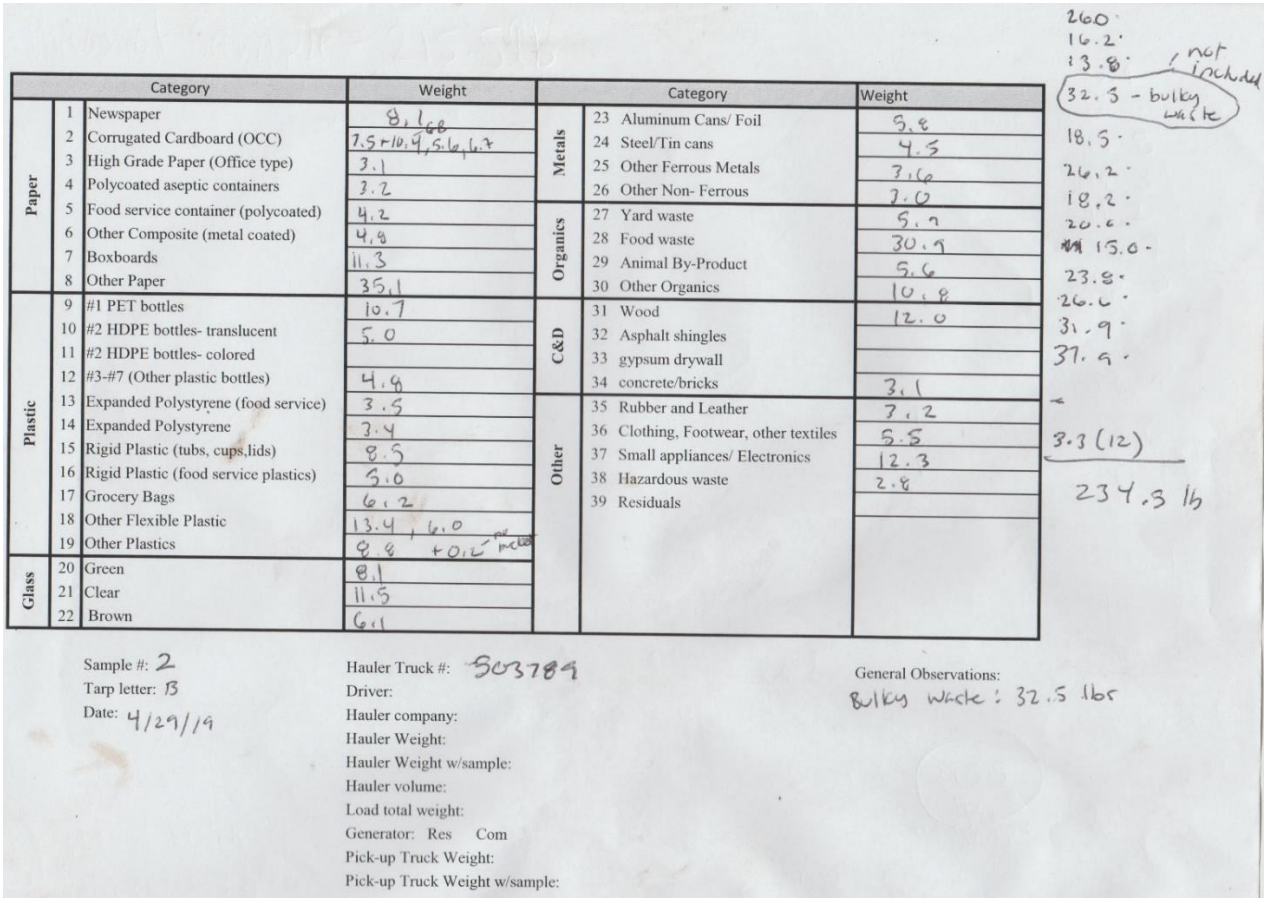
Where did the load come from? Zone (if known or applicable): 4

Approximate area (street names or neighborhoods): ~~Maguire Southeast Colonial~~ E Colonial BR, Maguire Blvd

Additional notes/ observations from driver about load: Furniture.

Any bulky items or white goods picked up in the load? YES or NO

5.3 Data Collection Sheet



		Category	Weight
Paper	1	Newspaper	8, 1, 6.8
	2	Corrugated Cardboard (OCC)	7.5+10.4, 5.6, 6.7
	3	High Grade Paper (Office type)	3.1
	4	Polycoated aseptic containers	3.2
	5	Food service container (polycoated)	4.2
	6	Other Composite (metal coated)	4.8
	7	Boxboards	11.3
	8	Other Paper	35.1
Plastic	9	#1 PET bottles	10.7
	10	#2 HDPE bottles- translucent	5.0
	11	#2 HDPE bottles- colored	
	12	#3-#7 (Other plastic bottles)	4.9
	13	Expanded Polystyrene (food service)	3.5
	14	Expanded Polystyrene	3.4
	15	Rigid Plastic (tubs, cups,lids)	8.5
	16	Rigid Plastic (food service plastics)	5.0
	17	Grocery Bags	6.2
	18	Other Flexible Plastic	13.4, 6.0
	19	Other Plastics	8.8 +0.2 per meter
Glass	20	Green	8.1
	21	Clear	11.5
	22	Brown	6.1

		Category	Weight
Metals	23	Aluminum Cans/ Foil	5.8
	24	Steel/Tin cans	4.5
	25	Other Ferrous Metals	3.6
	26	Other Non- Ferrous	7.0
Organics	27	Yard waste	5.7
	28	Food waste	30.9
	29	Animal By-Product	5.6
	30	Other Organics	10.8
C&D	31	Wood	12.0
	32	Asphalt shingles	
	33	gypsum drywall	
	34	concrete/bricks	3.1
Other	35	Rubber and Leather	7.2
	36	Clothing, Footwear, other textiles	5.5
	37	Small appliances/ Electronics	12.3
	38	Hazardous waste	2.8
	39	Residuals	

260
16.2
13.8 (not included)
32.5 - bulky waste
18.5
26.2
18.2
20.6
15.0
23.8
26.6
31.9
37.9

3.3 (12)

234.3 lb

Sample #: 2
Tarp letter: B
Date: 4/29/19

Hauler Truck #: 503789
Driver:
Hauler company:
Hauler Weight:
Hauler Weight w/sample:
Hauler volume:
Load total weight:
Generator: Res Com
Pick-up Truck Weight:
Pick-up Truck Weight w/sample:

General Observations:
Bulky Waste: 32.5 lbs