

Chapter 20: St. Joseph

COMMUNITY PROFILE

St. Joseph is the fourth largest city in Missouri. It is the county seat of Buchanan County and is a member of the Region D Solid Waste Management District in Northwest Missouri. St. Joseph is a large manufacturing and business center and is home to the Pony Express museum and Missouri Western State College. The City is located along Interstate 29 and is 307 miles west of St. Louis, 219 miles north of Springfield, and 55 miles north of Kansas City.

Demographics:

	St. Joseph	Buchanan County
Area (sq. miles)	43.36	409.69
Population (1990)	71,852	83,083
Density (per sq. mile)	1656.99	202.79
Pop. Change since 1980	-6.3%	-5.5%
Number of households	28,291	32,368
Persons per household	2.50	2.49
High school graduates	35.9%	36.7%
Median Family Income	\$27,749	\$28,476
Percent below poverty level	16.7%	15.6%

Solid Waste Collection

Solid Waste is collected by private haulers. Trash collection is not mandatory in St. Joseph. There are approximately 10 private haulers currently servicing the St. Joseph area.

Solid Waste Disposal

The City of St. Joseph owns and operates its own landfill, and it is the only landfill in District D. Most of the solid waste from St. Joseph and the surrounding areas is transported to this landfill. The City of St. Joseph Landfill receives approximately 104,522 tons of waste per year, and the tipping fee at the landfill is \$24.00 per ton.

Waste Reduction and Recycling Programs

St. Joseph has one drop-off recycling facility that is open to the public four days a week. Approximately 996 tons of material per year are recycled through this facility (1996). Education about recycling is done through the city newspaper, and District D does some education through the schools. The District also sponsors many seasonal "pick-up" programs for their areas including household hazardous waste, textiles, and tires.

St. Joseph Sanitary Landfill Results

Information about sample size and composition are listed in tables 20-1 to 20-8.

All weights are listed in pounds and all volumes are in cubic feet.

SORT #1

Sort Conditions

The first sort was conducted March 10-11, 1997. A site adjacent to the main unloading cell was selected for sorting activities. The weather was mild and sunny.

Statistics	
Estimated MSW (lbs) Collected by Site During Sampling Period	1,598,369
Total Sample Weight (lbs)	2721.3
Significance Test Results	.000
Number of Samples Collected	12

OTHER WASTE CATEGORIES			
Over-the-counter Medication (OTC)	2	Beauty/Hygiene Aerosol Products	1
Prescription Medication (Rx)	1	Household Cleaning Aerosol Products	2
Beauty/Hygiene Products	5	Gardening/Yard Care Products	0
Household Cleaning Products	0	Pet Groom Products	0
Sharps/Blades	0	Disposable Razors	25
Syringes	1	Alkaline Batteries	11
Hardware/Shop Products	0	Automobile Maintenance/Cleaning Products	0
Aerosol Cans	4		
Miscellaneous items: 1 shotgun shell.			
Total Weight (lb): 7.5			
Total Volume (cubic ft.): .5			

**ST. JOSEPH SANITARY LANDFILL
SORT # 1**

Sample #	Sample Size		Composition		Recycling Activities	Collection Location
	Weight	Volume	Res.	Comm.		
1	249.1	47.5	100%	0%	Drop-off	St. Joseph (residential)
2	310	63.7	90%	10%	Drop-off	St. Joseph (residential)
3	190.3	51.5	100%	0%	Drop-off	St. Joseph (residential)
4	206.2	55.5	100%	0%	None	Easton (rural and residential)
5	192.1	50.5	90%	10%	Drop-off	St. Joseph (in-town commercial)
6	198.4	44	100%	0%	Drop-off	St. Joseph (residential)
7	169.5	40.4	60%	40%	Drop-off	St. Joseph (residential)
8	206.9	48.7	100%	0%	None	Plattsburg (residential)
9	231.1	48.1	100%	0%	Drop-off	St. Joseph (residential)
10	313.9	61.9	100%	0%	Drop-off	St. Joseph (city residential)
11	211.9	50.7	100%	0%	Drop-off	St. Joseph (residential)
12	235.6	51.6	100%	0%	Drop-off	St. Joseph (residentail)
TOTALS	2721.3	614.1				
AVERAGE	226.775	51.2	95%	5%		

TABLE 20-1

ST. JOSEPH SANITARY LANDFILL

SORT # 1

CATEGORY	TOTALS		AVERAGE		PERCENTAGE	
	wt.	vol.	wt.	vol.	Pct. by wt.	Pct. by vol.
Cardboard	220.2	84.5	18.4	7.0	8.09%	13.75%
Newsprint	264.5	41.5	22.0	3.5	9.72%	6.75%
Magazines	132.2	12.2	11.0	1.0	4.86%	1.99%
High Grade	49.3	11.8	4.1	1.0	1.81%	1.92%
Mixed	397.6	115.3	33.1	9.6	14.61%	18.76%
PAPER TOTALS	1063.8	265.3	88.7	22.1	39.09%	43.17%
Clear	84.7	8.4	7.1	0.7	3.11%	1.37%
Brown	47.6	4.2	4.0	0.4	1.75%	0.68%
Green	17.7	1.5	1.5	0.1	0.65%	0.24%
Other	14.9	1.8	1.2	0.2	0.55%	0.29%
GLASS TOTALS	164.9	15.9	13.7	1.3	6.06%	2.59%
Alum. Cans	39.5	13.8	3.3	1.2	1.45%	2.25%
Other Alum	24.0	7.4	2.0	0.6	0.88%	1.20%
Non ferrous	3.1	0.4	0.3	0.0	0.11%	0.07%
Food Cans	113.6	20.5	9.5	1.7	4.17%	3.34%
Ferrous	19.2	2.6	1.6	0.2	0.71%	0.42%
Oil Filters	0.0	0.0	0.0	0.0	0.00%	0.00%
METAL TOTALS	199.4	44.7	16.6	3.7	7.33%	7.27%
PET # 1	63.8	30.5	5.3	2.5	2.34%	4.96%
HDPE # 2	55.5	29.8	4.6	2.5	2.04%	4.85%
Film	101.0	55.5	8.4	4.6	3.71%	9.03%
Other Plastic	161.6	69.0	13.5	5.8	5.94%	11.23%
PLASTIC TOTALS	381.9	184.8	31.8	15.4	14.03%	30.07%
Food Waste	584.6	58.0	48.7	4.8	21.48%	9.44%
Wood Waste	42.1	5.5	3.5	0.5	1.55%	0.89%
Textiles	63.2	10.8	5.3	0.9	2.32%	1.76%
Diapers	74.8	8.4	6.2	0.7	2.75%	1.37%
Other Organics	46.2	7.9	3.9	0.7	1.70%	1.29%
ORGANIC TOTALS	810.9	90.6	67.6	7.6	29.80%	14.74%
Fines	58.4	10.1	4.9	0.8	2.15%	1.64%
Other Inorganics	34.5	2.7	2.9	0.2	1.27%	0.44%
INORGANIC TOTALS	92.9	12.8	7.7	1.1	3.41%	2.08%
OTHER WASTE	7.5	0.5	0.6	0.0	0.28%	0.08%
GRAND TOTAL	2721.3	614.6	226.8	51.2	100.00%	100.00%

SORT #2

Sort Conditions

The second sort was conducted June 9-10, 1997. The same location was used for sort activities as in Sort #1. The weather was sunny and windy.

Statistics	
Estimated MSW (lbs) Collected by Site During Sampling Period	1,598,369
Total Sample Weight (lbs)	3188.3
Significance Test Results	.000
Number of Samples Collected	12

OTHER WASTE CATEGORIES			
Over-the-counter Medication (OTC)	1	Beauty/Hygiene Aerosol Products	1
Prescription Medication (Rx)	7	Household Cleaning Aerosol Products	4
Beauty/Hygiene Products	15	Gardening/Yard Care Products	0
Household Cleaning Products	3	Pet Groom Products	0
Sharps/Blades	3	Disposable Razors	4
Syringes	1	Alkaline Batteries	38
Hardware/Shop Products	2	Automobile Maintenance/Cleaning Products	0
Aerosol Cans	8		
Miscellaneous items: 1 thermostat fixture with mercury, 3 butane cigarette lighters.			
Total Weight (lb): 13.0			
Total Volume (cubic ft.): 1.5			

ST. JOSEPH SANITARY LANDFILL
SORT # 2

Sample #	Sample Size		Composition		Recycling Activities	Collection Location
	Weight	Volume	Res.	Comm.		
1	284.9	50	100%	0%	Drop-off	St. Joseph (in-town)
2	202.6	61.1	100%	0%	Drop-off	St. Joseph (in-town)
3	319.5	56.3	100%	0%	Drop-off	St. Joseph (in-town)
4	258.8	53.9	70%	30%	Drop-off	St. Joseph (in-town)
5	297.4	63.3	100%	0%	Drop-off	St. Joseph (in-town)
6	275.4	57.8	100%	0%	Drop-off	St. Joseph (in-town)
7	203.8	53.7	50%	50%	Drop-off	St. Joseph (in-town)
8	242.8	53.6	50%	50%	Drop-off	St. Joseph (in-town)
9	259.3	58.1	50%	50%	Drop-off	St. Joseph (in-town)
10	316.5	55.5	50%	50%	Drop-off	St. Joseph (in-town)
11	226.2	61.6	80%	20%	Drop-off	St. Joseph (in-town)
12	301.3	65.7	80%	20%	Drop-off	St. Joseph (in-town)
TOTALS	3188.5	690.6				
AVERAGE	265.7083	57.6	78%	22%		

TABLE 20-3

ST. JOSEPH SANITARY LANDFILL

SORT # 2

CATEGORY	TOTALS		AVERAGE		PERCENTAGE	
	wt.	vol.	wt.	vol.	Pct. by wt.	Pct. by vol.
Cardboard	225.0	76.0	18.8	6.3	7.06%	11.00%
Newsprint	467.6	55.3	39.0	4.6	14.67%	8.00%
Magazines	58.1	8.8	4.8	0.7	1.82%	1.27%
High Grade	95.4	14.4	8.0	1.2	2.99%	2.08%
Mixed	422.1	123.7	35.2	10.3	13.24%	17.90%
PAPER TOTALS	1268.2	278.2	105.7	23.2	39.78%	40.26%
Clear	107.4	7.5	9.0	0.6	3.37%	1.09%
Brown	105.1	10.4	8.8	0.9	3.30%	1.51%
Green	10.8	0.8	0.9	0.1	0.34%	0.12%
Other	8.5	1.2	0.7	0.1	0.27%	0.17%
GLASS TOTALS	231.8	19.9	19.3	1.7	7.27%	2.88%
Alum. Cans	42.9	26.0	3.6	2.2	1.35%	3.76%
Other Alum	20.9	8.6	1.7	0.7	0.66%	1.24%
Non ferrous	0.9	0.4	0.1	0.0	0.03%	0.06%
Food Cans	95.0	24.0	7.9	2.0	2.98%	3.47%
Ferrous	40.8	5.4	3.4	0.5	1.28%	0.78%
Oil Filters	1.2	0.1	0.1	0.0	0.04%	0.01%
METAL TOTALS	201.7	64.5	16.8	5.4	6.33%	9.33%
PET # 1	37.9	22.1	3.2	1.8	1.19%	3.20%
HDPE # 2	69.4	42.2	5.8	3.5	2.18%	6.11%
Film	102.9	50.0	8.6	4.2	3.23%	7.24%
Other Plastic	166.9	90.6	13.9	7.6	5.23%	13.11%
PLASTIC TOTALS	377.1	204.9	31.4	17.1	11.83%	29.65%
Food Waste	623.1	53.0	51.9	4.4	19.54%	7.67%
Wood Waste	8.5	2.0	0.7	0.2	0.27%	0.29%
Textiles	110.1	20.4	9.2	1.7	3.45%	2.95%
Diapers	89.5	8.7	7.5	0.7	2.81%	1.26%
Other Organics	136.6	23.2	11.4	1.9	4.28%	3.36%
ORGANIC TOTALS	967.8	107.3	80.7	8.9	30.36%	15.53%
Fines	101.1	12.9	8.4	1.1	3.17%	1.87%
Other Inorganics	27.6	1.8	2.3	0.2	0.87%	0.26%
INORGANIC TOTALS	128.7	14.7	10.7	1.2	4.04%	2.13%
OTHER WASTE	13.0	1.5	1.1	0.1	0.41%	0.22%
GRAND TOTAL	3188.3	691.0	265.7	57.6	100.00%	100.00%

SORT #3

Sort Conditions

The third sort was conducted September 17-19, 1997. The same location was used for sort activities as in the previous sort. The weather was hot and humid.

Statistics	
Estimated MSW (lbs) Collected by Site During Sampling Period	1,598,369
Total Sample Weight (lbs)	1252.0
Significance Test Results	.000
Number of Samples Collected	6

OTHER WASTE CATEGORIES			
Over-the-counter Medication (OTC)	0	Beauty/Hygiene Aerosol Products	0
Prescription Medication (Rx)	0	Household Cleaning Aerosol Products	1
Beauty/Hygiene Products	3	Gardening/Yard Care Products	0
Household Cleaning Products	0	Pet Groom Products	0
Sharps/Blades	0	Disposable Razors	0
Syringes	21	Alkaline Batteries	20
Hardware/Shop Products	1	Automobile Maintenance/Cleaning Products	0
Aerosol Cans	0		
Miscellaneous items: 2 cans of paint, 4 containers of oil, 1 butane lighter.			
Total Weight (lb): 16.0			
Total Volume (cubic ft.): 1.0			

**ST. JOSEPH SANITARY LANDFILL
SORT # 3**

Sample #	Sample Size		Composition		Recycling Activities	Collection Location
	Weight	Volume	Res.	Comm.		
1	223.2	60.4	90%	10%	Drop-off	St. Joseph
2	222.6	52.7	90%	10%	Drop-off	St. Joseph
3	143.9	42.7	90%	10%	Drop-off	St. Joseph
4	185.9	44.1	80%	20%	Drop-off	St. Joseph
5	314.1	65.8	90%	10%	None	Holt County
6	162.4	43.7	95%	5%	Drop-off	St. Joseph
TOTALS	1252.1	309.2				
AVERAGE	208.6833	51.5	89%	11%		

TABLE 20-5

ST. JOSEPH SANITARY LANDFILL

SORT # 3

CATEGORY	TOTALS		AVERAGE		PERCENTAGE	
	wt.	vol.	wt.	vol.	Pct. by wt.	Pct. by vol.
Cardboard	99.5	40.8	16.6	6.8	7.94%	13.20%
Newsprint	138.0	18.5	23.0	3.1	11.02%	5.98%
Magazines	68.7	7.5	11.4	1.3	5.48%	2.43%
High Grade	50.5	9.9	8.4	1.7	4.03%	3.20%
Mixed	157.0	50.0	26.2	8.3	12.54%	16.17%
PAPER TOTALS	513.5	126.7	85.6	21.1	41.01%	40.98%
Clear	30.5	3.5	5.1	0.6	2.44%	1.13%
Brown	10.0	2.1	1.7	0.4	0.79%	0.68%
Green	5.7	0.8	0.9	0.1	0.45%	0.26%
Other	10.6	1.4	1.8	0.2	0.84%	0.45%
GLASS TOTALS	56.7	7.8	9.4	1.3	4.52%	2.52%
Alum. Cans	19.5	10.8	3.3	1.8	1.56%	3.49%
Other Alum	9.0	5.2	1.5	0.9	0.72%	1.68%
Non ferrous	2.5	0.4	0.4	0.1	0.20%	0.13%
Food Cans	36.7	9.6	6.1	1.6	2.93%	3.10%
Ferrous	45.2	2.7	7.5	0.5	3.61%	0.87%
Oil Filters	2.0	1.0	0.3	0.2	0.16%	0.32%
METAL TOTALS	114.9	29.7	19.2	5.0	9.18%	9.61%
PET # 1	11.0	8.8	1.8	1.5	0.88%	2.85%
HDPE # 2	26.0	18.5	4.3	3.1	2.08%	5.98%
Film	38.3	21.7	6.4	3.6	3.06%	7.02%
Other Plastic	72.0	43.0	12.0	7.2	5.75%	13.91%
PLASTIC TOTALS	147.2	92.0	24.5	15.3	11.76%	29.75%
Food Waste	200.3	19.5	33.4	3.3	15.99%	6.31%
Wood Waste	9.7	2.2	1.6	0.4	0.77%	0.71%
Textiles	56.8	11.5	9.5	1.9	4.53%	3.72%
Diapers	36.2	4.4	6.0	0.7	2.89%	1.42%
Other Organics	27.0	6.0	4.5	1.0	2.16%	1.94%
ORGANIC TOTALS	329.9	43.6	55.0	7.3	26.35%	14.10%
Fines	40.9	4.5	6.8	0.8	3.27%	1.46%
Other Inorganics	33.0	3.9	5.5	0.7	2.63%	1.26%
INORGANIC TOTALS	73.9	8.4	12.3	1.4	5.90%	2.72%
OTHER WASTE	16.0	1.0	2.7	0.2	1.28%	0.32%
GRAND TOTAL	1252.0	309.2	208.7	51.5	100.00%	100.00%

TABLE 20-6

SORT SUMMARY

Seasonal variations

- The volume of newsprint was larger than usual due to the St. Joseph News Press and the Kansas City Star.
- Glass totals increased during the second sort (in the summer). There were more beverage bottles.
- Food waste seemed larger than normal.

Sort results

- Chart 20-1 graphically compares the three seasonal sort results and shows the average waste composition, by major category, for St. Joseph.
- The sample data for all St. Joseph waste sorts are listed on Table 20-7.
- The sort results for St. Joseph are listed on Table 20-8.
- The summary of statistical relevance for the St. Joseph sorts is located on page 324.
- The total for all “other wastes” found during the St. Joseph sorts is on page 324.

All weights are in pounds and volumes are listed in cubic feet.

Comparisons of the St. Joseph’s waste stream to previous studies and other communities can be found in Chapter 24.

ST. JOSEPH RESULTS BY WEIGHT

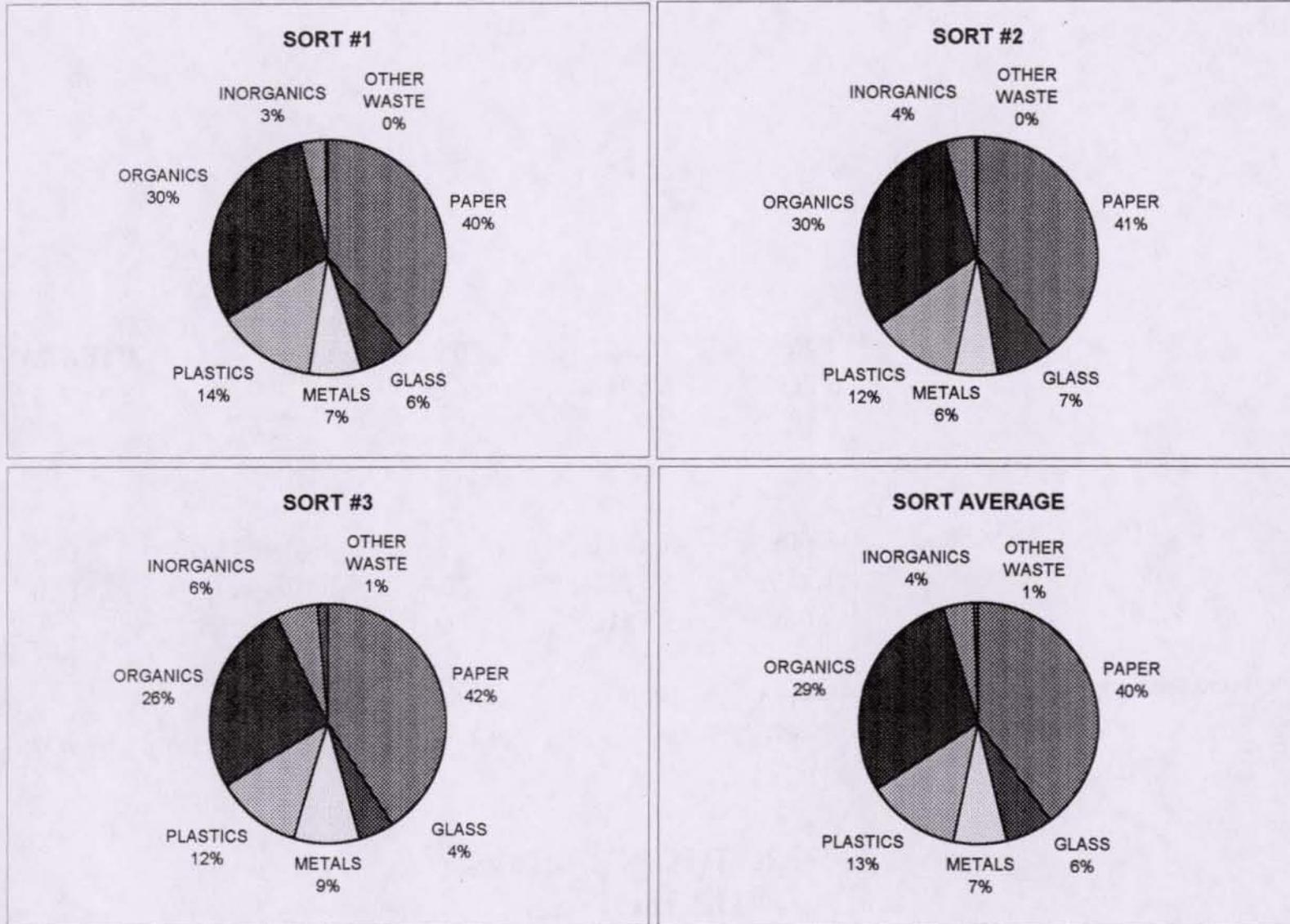


CHART 20-1

**ST. JOSEPH
SAMPLE SUMMARY**

Sort #	Dates	Number of Samples	Sample Size		Composition	
			Weight	Volume	Residential	Commercial
1	3/10-3/11	12	3188.5	690.6	78%	22%
2	6/9-6/10	12	2721.3	614.1	95%	5%
3	9/18-9/19	6	1252.1	309.2	89%	11%
TOTALS		30.0	7161.9	1613.9		
AVERAGE		10.0	2387.3	538.0	87%	13%

TABLE 20-7

CATEGORY	ST. JOSEPH						SUMMARY	
	SORT # 1		SORT # 2		SORT # 3		AVERAGE	
	WT.	VOL.	WT.	VOL.	WT.	VOL.	WT.	VOL.
Cardboard	8.1%	13.7%	7.1%	11.0%	7.9%	13.2%	7.6%	12.5%
Newsprint	9.7%	6.8%	14.7%	8.0%	11.0%	6.0%	12.1%	7.1%
Magazines	4.9%	2.0%	1.8%	1.3%	5.5%	2.4%	3.6%	1.8%
High Grade	1.8%	1.9%	3.0%	2.1%	4.0%	3.2%	2.7%	2.2%
Mixed	14.6%	18.8%	13.2%	17.9%	12.5%	16.2%	13.6%	17.9%
PAPER TOTALS	39.1%	43.2%	39.8%	40.3%	41.0%	41.0%	39.7%	41.5%
Clear	3.1%	1.4%	3.4%	1.1%	2.4%	1.1%	3.1%	1.2%
Brown	1.7%	0.7%	3.3%	1.5%	0.8%	0.7%	2.3%	1.0%
Green	0.7%	0.2%	0.3%	0.1%	0.5%	0.3%	0.5%	0.2%
Other	0.5%	0.3%	0.3%	0.2%	0.8%	0.5%	0.5%	0.3%
GLASS TOTALS	6.1%	2.6%	7.3%	2.9%	4.5%	2.5%	6.3%	2.7%
Alum. Cans	1.5%	2.2%	1.3%	3.8%	1.6%	3.5%	1.4%	3.1%
Other Alum	0.9%	1.2%	0.7%	1.2%	0.7%	1.7%	0.8%	1.3%
Non ferrous	0.1%	0.1%	0.0%	0.1%	0.2%	0.1%	0.1%	0.1%
Food Cans	4.2%	3.3%	3.0%	3.5%	2.9%	3.1%	3.4%	3.4%
Ferrous	0.7%	0.4%	1.3%	0.8%	3.6%	0.9%	1.5%	0.7%
Oil Filters	0.0%	0.0%	0.0%	0.0%	0.2%	0.3%	0.0%	0.1%
METAL TOTALS	7.3%	7.3%	6.3%	9.3%	9.2%	9.6%	7.2%	8.6%
PET # 1	2.3%	5.0%	1.2%	3.2%	0.9%	2.8%	1.6%	3.8%
HDPE # 2	2.0%	4.8%	2.2%	6.1%	2.1%	6.0%	2.1%	5.6%
Film	3.7%	9.0%	3.2%	7.2%	3.1%	7.0%	3.4%	7.9%
Other Plastic	5.9%	11.2%	5.2%	13.1%	5.8%	13.9%	5.6%	12.5%
PLASTIC TOTALS	14.0%	30.1%	11.8%	29.7%	11.8%	29.8%	12.7%	29.8%
Food Waste	21.5%	9.4%	19.5%	7.7%	16.0%	6.3%	19.7%	8.1%
Wood Waste	1.5%	0.9%	0.3%	0.3%	0.8%	0.7%	0.8%	0.6%
Textiles	2.3%	1.8%	3.5%	3.0%	4.5%	3.7%	3.2%	2.6%
Diapers	2.7%	1.4%	2.8%	1.3%	2.9%	1.4%	2.8%	1.3%
Other Organics	1.7%	1.3%	4.3%	3.4%	2.2%	1.9%	2.9%	2.3%
ORGANIC TOTALS	29.8%	14.7%	30.4%	15.5%	26.4%	14.1%	29.4%	15.0%
Fines	2.1%	1.6%	3.2%	1.9%	3.3%	1.5%	2.8%	1.7%
Other Inorganics	1.3%	0.4%	0.9%	0.3%	2.6%	1.3%	1.3%	0.5%
INORGANIC TOTALS	3.4%	2.1%	4.0%	2.1%	5.9%	2.7%	4.1%	2.2%
OTHER WASTE	0.3%	0.1%	0.4%	0.2%	1.3%	0.4%	0.5%	0.2%
SORT TOTALS	100%							

TABLE 20-8

St. Joseph Statistical Summary	
Estimated MSW (lbs) Collected by Site During Sampling Period	4,795,108
Total Sample Weight (lbs)	7161.6
Significance Test Results	.000
Number of Samples Collected	30
Mean Sample (lbs) and Confidence Interval (95%)	237.51 (+/-) 19.08

St. Joseph "Other Waste" Summary			
Over-the-counter Medication (OTC)	3	Beauty/Hygiene Aerosol Products	2
Prescription Medication (Rx)	8	Household Cleaning Aerosol Products	7
Beauty/Hygiene Products	23	Gardening/Yard Care Products	0
Household Cleaning Products	3	Pet Groom Products	0
Sharps/Blades	3	Disposable Razors	29
Syringes	23	Alkaline Batteries	69
Hardware/Shop Products	3	Automobile Maintenance/Cleaning Products	0
Aerosol Cans	12		
Miscellaneous items: 1 shotgun shell, 1 thermostat fixture with mercury, 4 butane cigarette lighters, 2 cans of paint, 4 containers of oil.			
Total Weight (lb): 36.5			
Total Volume (cubic ft.): 2.5			