



COMPOSITION ANALYSIS
for the
KITSAP COUNTY
CURBSIDE RECYCLING
PROGRAM

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On the cover: photo of recyclables in roll-off container on April 24, 2015.

INTRODUCTION

A. SCOPE AND OBJECTIVES

This report discusses the results of samples that were taken in April from loads of recyclable materials collected from single-family curbside carts in Kitsap County. These samples were sorted to determine the composition of the curbside materials, including the amount of non-recyclable materials (contamination) being placed in the carts. This project was also designed to test for differences in the composition of the materials being recycled by households in four districts of Kitsap County. This project was designed and conducted in the same manner as a similar study in 2013, thus allowing the results of the two studies to be compared.

Kitsap County hired the environmental consulting firm of Green Solutions (South Prairie, WA), which was assisted by the firm Herrera Environmental Consultants, Inc (Seattle, WA), to conduct the composition tests, analyze the data, and prepare this report on the results. This project was partially funded by a Coordinated Prevention Grant from the Washington Department of Ecology.

B. BACKGROUND

Residential commingled recycling collection is available to all Kitsap County residents. Contaminants such as clamshell containers, food-soiled paper, plastic film, and shredded paper can reduce the value of the commingled material collected at the curb, thus increasing the financial burden to residents through increased rates. Photo 1 (on the next page) shows typical contaminants sorted out of one of the samples for this project.

The curbside recycling program for single-family homes in Kitsap County is operated by two collection companies; Bainbridge Disposal and Waste Management. Bainbridge Disposal collects recyclables on Bainbridge Island and in Poulsbo, and these materials are taken to the Vincent Road Transfer Station. The loads are consolidated in a larger container at that site, which is then brought to a facility in Tacoma for processing there. The curbside program for the remainder of Kitsap County is conducted by Waste Management, and those materials are taken to the Olympic View Transfer Station (see Photo 2) for consolidation and transfer to a facility for processing.



Photo 1: Contaminants and other materials sorted from Sample #19, April 28, 2015.



Photo 2: Load of recyclables being dropped off at OVTS, April 24, 2015.

PROCEDURES AND RESULTS

A. INTRODUCTION

This section describes the procedures used to collect the composition data and provides the results.

B. OVERVIEW OF PROCEDURES

Accurately determining the composition of the recyclables collected in Kitsap County required several important steps:

- Selecting appropriate loads for sampling,
- Taking representative samples from the loads,
- Handling and sorting the samples properly, and
- Entering and analyzing the data accurately.

Each of these steps had to be performed in a manner that did not create biased or inaccurate results.

C. SELECTION OF LOADS FOR SAMPLING

The typical approach used to ensure unbiased selection of loads for sampling is to randomly select trucks as they arrive at the facility. This is often done by category or source, which is known as a “stratified sampling,” so that information is provided about specific sources as well as for the county as a whole.

For this project, Kitsap County was divided into four geographic areas for sampling purposes: north, central, south and Bainbridge Island. Based on previous experience, and within the limitations of the available budget and schedule, it was decided that 12 samples for each geographic area would provide a reasonable level of accuracy. The resulting aggregate amount of samples (48 for the entire county) provides accurate and reliable results for the county-wide average. For 48 samples altogether and given the size of the samples, the number of sorting categories and other factors associated with the fieldwork, it was necessary to conduct the fieldwork for a total of four days.

The last week in April (April 27 through April 30) was determined to be a good choice for this work. This week coincided with the recycling collection week on Bainbridge

Island, where recycling is collected one week by Bainbridge Disposal and yard debris is collected the other week on an alternating schedule. Recycling carts are also collected every-other-week in the rest of the county, but every day there are recyclables being collected in some area by Waste Management. The week chosen for the sampling project happened to provide a good selection of routes for two of the districts but not many loads were collected from the south district that week (see Waste Management's schedule for recycling routes in Attachment A).

An additional complication for the sampling efforts was the fact that the loads of recyclables collected by Bainbridge Disposal (from Bainbridge Island and the City of Poulsbo) are taken to a separate facility (the Vincent Road Transfer Station operated by Bainbridge Disposal) than the other three districts, and Poulsbo is collected on a different day than the rest of Bainbridge Disposal's service area. Hence, there was no one day of the week that the sorting crew could relocate from the Olympic View Transfer Station (OVTS) to the Vincent Road site to get a representative sampling of Bainbridge Disposal's loads. These loads are consolidated at the Vincent Road site in a large roll-off container for transfer to a recycling facility in Tacoma, and so this container (which fortunately for the purpose of this test consisted solely of curbside materials) was instead brought to OVTS for samples to be pulled from it.

One final complication for sampling was that most of the Waste Management trucks unloading at OVTS do not arrive there to unload until mid to late afternoon, so many of the samples from these trucks needed to be taken the day before and then held overnight to be sorted the next day.

All of the above constraints were taken into account in the sampling process and as a result samples were taken in three different ways:

- Since only one load from the south district was scheduled for the week that fieldwork was being conducted, four trucks from this area were sampled on the Friday before and stored over the weekend in a covered roll-off container. These samples were taken with a front end loader and placed in the roll-off container. When the crew arrived the following week to perform the sorting work, ten samples were taken from the roll-off container. This allowed the targeted 12 samples for this district to be taken from 5 different routes (four on the Friday before the week of fieldwork and one on the Tuesday of the week the sorting crew was at OVTS).
- For the Bainbridge Disposal samples, arrangements were made with Bainbridge Disposal to bring two of their transfer containers to OVTS instead of delivering those to Tacoma. One container was brought to OVTS on Tuesday, April 28 and this container consisted solely of curbside materials collected from Poulsbo. Four samples (a prorated share of the 12 samples targeted for the north district) were taken from this container. A second load was brought to OVTS on Wednesday,

April 29, and this load consisted of curbside materials collected on Bainbridge Island. Twelve samples were taken from this load.

- The remaining samples (twelve samples from the central district and eight from the north district) were taken from Waste Management trucks as they arrived and unloaded at OVTS. A few of these samples were sorted on the same day, but most of these were held overnight and sorted the next day. Loads to be sampled were randomly chosen from the incoming trucks, after checking with the drivers to confirm that the load was from a route in a district targeted for sampling that day.

Procedures used to actually take the samples from loads chosen for sampling are described in the next section.

D. SAMPLING OF LOADS

Once a load had been identified for sampling it was necessary to procure a sample from it. With the exception of the roll-off container of south district samples that was held over the weekend, samples were taken by the sorting crew by removing a vertical slice from the pile of materials after the load had been “tipped.” A vertical slice was used to encompass the potential stratification within the load (i.e., heavier objects such as glass bottles and broken glass shifting to the bottom of the load and lighter objects floating to the top and then falling to the sides when the load was emptied). Samples were taken by filling several 32-gallon trash cans and checking the weights of these cans until a sample size of 150 to 200 pounds had been reached. Once samples had been procured, these were either set aside to be sorted later that day or were wrapped in tarps to protect them from wind and rain and held overnight to be sorted the next day.

Similar procedures were used to sample the container of south district samples that been held over the weekend, except in this case most of the contents of the container was used for samples.

E. SORTING PROCEDURES

Standard sorting methods were used to divide each sample into specific categories. The list of sorting categories is shown in Table 1, and a copy of the sorting form used for this project is shown in Attachment B (definitions for the sorting categories are shown on the second page of the sorting form). Samples were placed one at a time onto a sorting table and sorted into the various categories. Once sorted, the components of each sample were weighed, and later this data was entered into a spreadsheet that allowed the calculation of the composition of the individual samples, averages for all of the samples, and statistical results.

**Table 1
SORTING CATEGORIES**

Program Materials	Non-Program Materials
Paper: Newspaper Cardboard Mixed paper Acceptable polycoated	Paper: Food-soiled paper Unacceptable polycoated Shredded paper
Plastic: Bottles Dairy tubs	Plastic: Bags Styrofoam Other packaging
Metals: Aluminum cans Tin cans	Metals: Scrap metal Aerosol cans
Glass: Bottles Broken glass	Glass: Non-recyclable
	Other: Food scraps Diapers Yard debris Other residuals

Sorting activities began each day with Rick Hlavka arriving at OVTS about 6:30 a.m. to prepare the sorting area and the first sample. Dan Bennett (Herrera Environmental Consultants) arrived shortly after that, and the sorting crew (four temporary workers hired through the local LaborReady office) arrived about 8:00 a.m. On the first day, the sorting crew set up a 20' by 20' canopy next to the recycling tipping area to provide a dry working area.

F. COMPOSITION RESULTS

The composition results are shown in Table 2. The data shown in this table includes the averages of the samples taken for each district, and a countywide average of the district results. The countywide average is a weighted average that was calculated based on the relative amounts of curbside recyclables collected from each district. Data reported by the collection companies for the tonnages collected in 2014 was used for this calculation. The percentage of Bainbridge Island materials was easily determined from this data, which shows this area generating 14.6% of the total curbside materials

**Table 2
COMPOSITION RESULTS, CURBSIDE RECYCLING SAMPLES**

Type of Material	Results by District				Countywide Average
	North	Central	South	Bainbridge Island	
Program Materials					
Recyclable Paper	58.6	58.1	50.9	60.1	56.6
Newspaper	11.7	12.6	9.6	15.4	12.0
Cardboard	13.4	15.3	16.5	10.6	14.5
Mixed Paper	31.7	28.5	23.3	32.7	28.4
Acceptable Polycoated	1.7	1.6	1.6	1.5	1.6
Recyclable Plastic	6.4	6.1	10.1	3.8	6.9
Plastic Bottles	6.2	5.8	9.8	3.6	6.6
Dairy Tubs	0.2	0.2	0.3	0.2	0.2
Recyclable Metals	3.6	3.9	4.8	2.5	3.9
Aluminum Cans	1.7	1.5	2.0	0.8	1.6
Tin Cans	1.9	2.4	2.8	1.8	2.3
Recyclable Glass	20.5	22.4	23.8	28.1	23.2
Glass Bottles	13.9	18.9	14.3	14.5	16.0
Broken Glass	6.6	3.5	9.6	13.6	7.2
Total Program Materials	89.0	90.4	89.6	94.6	90.5
Non-Program Materials					
Non-Program Paper	0.9	1.0	1.1	0.4	0.9
Unacceptable Polycoated	0.08	0.07	0.05	0.02	0.06
Food-Soiled Paper	0.6	0.8	1.0	0.4	0.8
Shredded Paper	0.1	0.08	0.01	0	0.06
Non-Program Plastic	2.4	2.5	3.6	2.1	2.7
Bags	0.6	0.7	0.6	0.3	0.6
Styrofoam	0.08	0.08	0.1	0.05	0.09
Other Packaging	1.7	1.7	2.9	1.7	2.0
Non-Program Metals	0.9	1.1	0.4	0.8	0.8
Scrap Metal	0.9	1.0	0.3	0.8	0.8
Aerosol Cans	0.04	0.08	0.06	0.02	0.06
Non-Program Glass	0.1	0.07	0.04	0.03	0.07
Other	6.7	5.0	5.4	2.1	5.0
Food Scraps	0.9	1.2	0.8	0.1	0.9
Diapers	0.2	0.01	0.1	0	0.07
Yard Debris	0.03	0.03	0.01	0.01	0.02
Other Residuals	5.6	3.8	4.4	2.0	4.1
Total Non-Program Materials	11.0	9.6	10.4	5.5	9.5

Note: All figures are percentages by weight. The countywide average is a weighted average of the district results calculated based on 20.2% of the materials coming from the north district, 38.2% from the central district, 27.0% from the south district, and 14.6% from the Bainbridge Island district.

collected in 2014. The tonnages collected by Waste Management in the other three districts were prorated based on the number of routes conducted in each area (see Attachment A). The amount collected in the north district was adjusted by adding the tonnages collected in Poulsbo by Bainbridge Disposal. Based on this analysis, the percentage of the curbside materials collected from each of these three districts is 20.2% for the north district, 38.2% for the central district, and 27.0% for the south district.

G. TEST FOR SIGNIFICANT DIFFERENCES BETWEEN DISTRICTS

The results shown in Table 2 indicate that there may be differences in the composition of the materials being recycled by the households in the four districts of Kitsap County. One test for this is to examine the average results for each district and the associated degree of uncertainty. The degree of uncertainty associated with these samples can be calculated using the standard deviations of the actual results, and the result of this calculation can be expressed as upper and lower confidence limits (“plus or minus figures”). Comparing the upper and lower confidence limits for each district and each material (see the bottom rows of the tables in Attachment C) can also be used as an indication of whether there are significant differences in two values, such as whether there may be a significant difference in the value for mixed paper in the Bainbridge Island samples (32.7%) versus the south district (23.3%). In this case, the lower and upper confidence limits for the amount of mixed paper in the south district samples ranges from 21.5% to 25.2%, versus 29.2% to 36.2% for the Bainbridge Island samples. Since these two ranges do not overlap, there is a strong likelihood that there is a significant difference in the amount of mixed paper being recycled in the two areas. The Student’s t-test is, however, a more rigorous and accurate measure of statistically-valid differences.

A better test of whether apparent differences are statistically significant can be accomplished through the use of the “Student’s t-test” and other tests. These tests take into account the uncertainty associated with the results. The uncertainty is related to the fact that one cannot be sure that any one sample (or a group of samples) is entirely representative of the larger universe of material being sampled. A factor that should be considered with this analysis is that the Student’s t-test is being conducted here on the composition percentages, as a test for significant differences in the composition of the materials, but this is not the same as a difference in the amount of a material being recycled. A large amount of a single material can shift (reduce) the percentages of the other materials and cause the other materials to appear to be different, even though the amount recycled (in terms of pounds per household) might be exactly the same. By itself, however, it would take a relatively large (or small) amount of a material to create a sufficiently significant difference to test positive for statistical meaningfulness, and conducting the t-test on a pounds per household basis would require data that is not easily available. It is still worthwhile, however, to keep this difference in mind as these

results are evaluated, especially where there are large differences in the overall pounds per household being recycled in the different districts.

Conducting the Student’s t-test on the composition results from this project leads to the conclusions shown in Table 3. As can be seen in that table, several materials in the Bainbridge Island samples differ from the other three districts by more than a 94% probability, meaning that there is less than a 6% chance that these differences are due to chance. For this calculation, the sample results for Bainbridge Island were compared to the next closest set of data, meaning that if the test were to be conducted with every one of the other three districts, than the conclusion might be that additional materials in the Bainbridge Island samples were significantly different from one or two other districts but not all of them.

**Table 3
RESULTS FOR STUDENT’S T-TEST**

District and Material	Probability of Significant Difference
Bainbridge Island recyclables have:	
More newspaper	98%
Less cardboard	99%
Less plastic bottles	99%
Less aluminum cans	99%
Less food waste	99%
Less other residuals	96%
Less total non-program materials	94%
South District recyclables have:	
More mixed paper	99%
More plastic bottles	99%
More plastic packaging	99%

The only other district that was significantly different from the other districts was the higher amounts of mixed paper, plastic bottles and plastic packaging in the south district compared to the other three districts. None of the material percentages in the north and central samples were significantly different from the other districts.

H. ADDITIONAL INFORMATION

As part of the fieldwork for this study, the amount of plastic bottles that still had the caps on was estimated. This was done after sorting each sample, as the plastic bottles

were being weighed, and was based on a visual estimate of the percentage of bottles with caps. The result of this effort is that an average of 18% of the plastic bottles still had the caps on them.

CONCLUSIONS

A. INTRODUCTION

This section shows recovery rates and other conclusions that are based on the results of this project.

B. RECOVERY RATES

The composition data gathered by this project can be compared to composition data for the county's waste stream to calculate the recovery rates for specific materials. To do this, the average values for the composition of the recyclables, which are expressed as percentages by weight, must be applied to the tons of recyclable material from Kitsap County households for a given time period to calculate the tonnages of each material

Table 4
RECOVERY RATES FOR RECYCLABLE MATERIALS

Type of Material	Recycled Amount		Disposed Amount		Recovery Rate, %
	County-Wide Average	Tons in 2014	Residential Average	Tons in 2014	
Paper	56.6%	10,399	13.5%	6,025	63%
Newspapers	12.0%	2,208	2.2%	982	69%
Cardboard	14.5%	2,673	1.7%	759	78%
Mixed Waste Paper	28.4%	5,219	9.6%	4,284	55%
Acceptable Polycoated	1.6%	298	NA ¹	NA	NA
Plastic	6.9%	1,264	2.8%	1,250	50%
Bottles	6.6%	1,220	2.8%	1,250	49%
Dairy Tubs	0.2%	44	NA	NA	NA
Metal	3.9%	712	1.7%	759	48%
Aluminum Cans	1.6%	288	0.7%	312	48%
Tin Cans	2.3%	423	1.0%	446	49%
Glass (bottles and broken)	23.2%	4,268	2.0%	893	83%
TOTAL PROGRAM MATERIALS	90.5%	16,643	20.0%	8,926	65%
NON-PROGRAM MATERIALS	9.5%	1,745	80.0%	35,702	
TOTAL ALL MATERIALS	100%	18,388	100%	44,628	

Notes: NA = Not Available, these materials were not measured separately by the Ecology study.

collected for recycling. These tonnages must be compared to the tons of each material remaining in the waste stream for a similar time period. The data in Table 4 shows the countywide average and the tons of each collected in 2014, based on a total of 18,388 tons of curbside materials collected in 2014. The next set of columns in this table shows the percentages of each material in the waste stream, from a 2009 study for the Department of Ecology, and the tons of each material disposed based on 44,628 tons of waste disposed by single-family households in Kitsap County in 2014. The recovery rate is then easily calculated as the amount of recycled material divided by the sum of the recycled and disposed amounts of that material.

C. POUNDS PER HOUSEHOLD

Data reported to Kitsap County by the collection companies can be used to calculate the amount of recyclables from each area (see Table 5). This provides an interesting check on possible differences in composition for the different areas.

Table 5
POUNDS COLLECTED PER HOUSEHOLD

City or Area	Tons Collected, 2014	Households Served*	Pounds per Household per Year
Bainbridge Island	2,682	5,991	895
Bremerton	2,443	9,881	494
Navy Housing	281	NA	NA
Port Orchard	1,076	3,365	640
Poulsbo	620	2,932	423
Unincorporated	<u>11,286</u>	<u>42,021</u>	<u>537</u>
Totals	18,388	64,190	573
North, Central and South Districts Combined	15,425	58,199	530

* Number of single-family customers as of April, 2013.
NA = Data is not available.

The bottom row of Table 5 shows the combined data for the north, central and south districts. These three districts were combined because it was not possible to split up these individual districts (neither the tonnages collected nor the number of households served was available on that basis). The combined data for these three districts also does not include the tonnages collected for Navy Housing, again due to the lack of data (in this case, the number of households served).

The data shown in Table 5 helps to address the question as to whether and how much the composition of recyclables from Bainbridge Island differs from the rest of the county (see Table 3). The higher amount of total pounds of recyclables set out for recycling by Bainbridge Island households (895 pounds per year) compared to the average for households in the other three areas (530 pounds) shows that there is a very real difference in the amounts recycled at higher rates by Bainbridge Island residents (i.e., newspaper). For newspaper, Bainbridge Island households are setting out 538 pounds of newspaper per household per year compared to 292 pounds per household per year for the other three districts in the county. Conversely, the materials present in lower quantities in the Bainbridge Island recyclables are actually being set out at similar rates on a pounds-per-household basis in some cases. Table 6 shows how these figures compare for specific materials.

Table 6
ANNUAL AMOUNTS COLLECTED PER HOUSEHOLD

Type of Material	Composition Results		Pounds per HH	
	Bainbridge Island	Other Three Districts	Bainbridge Island	Other Three Districts
Paper	60.1%	55.1%	538	292
Newspapers	15.4%	11.0%	138	59
Cardboard	10.6%	15.4%	94	82
Mixed Waste Paper	32.7%	27.0%	293	143
Acceptable Polycoated	1.5%	1.6%	14	9
Plastic	3.8%	7.9%	34	42
Bottles	3.6%	7.7%	32	41
Dairy Tubs	0.2%	0.2%	2	1
Metal	2.5%	4.2%	23	22
Aluminum Cans	0.8%	1.8%	7	9
Tin Cans	1.8%	2.5%	16	13
Glass (bottles and broken)	28.1%	22.6%	251	120
TOTAL PROGRAM MATERIALS	94.6%	89.8%	846	476
NON-PROGRAM MATERIALS	5.4%	10.3%	49	55
TOTAL ALL MATERIALS	100%	100%	895	530

Note: Composition results are percentages by weight. The average for the “Other Three Districts” is a weighted average based on 23.6% of the materials coming from the north district, 31.7% from the central district, and 44.8% from the south district in 2015.

The pounds per household (HH) figures are based on the results shown in Table 5.

D. COMPARISON OF RESULTS TO PREVIOUS STUDY

Table 6 compares the results of the current study to the study conducted in 2013 for Bainbridge Island and the other three districts. Bainbridge Island is shown separately in this table, rather than simply comparing the countywide averages for 2013 and 2015, because the amount of material from Bainbridge Island increased significantly in the past two years and this alone would have caused the results to appear different.

E. CONCLUSIONS

The following comments and conclusions are based on observations made during the fieldwork and the analysis conducted on the data collected.

Recyclable Materials Recovery Rate: It's interesting to see that materials such as glass bottles and a few of the paper grades are being recycled at a rate that is better than average (see Table 4), while a few commonly-recognized recyclables (aluminum cans and plastic bottles) are not being recycled as well. It is perhaps not surprising to see lower recovery rates for tins cans, where cleaning the cans may be a disincentive. The lower recovery rate for mixed paper is also not surprising, as less-than-avid recyclers sometimes draw the line there and do not attempt to divert all of their junk mail or other materials, but there is great potential to increase the recycling tonnages with that material.

Plastic Bags: The amount of plastic bags in the recycling samples was significant. Although not large on a weight basis (0.6% for the county-wide average), plastic bags are of course very light and so this amount represents a very large number of bags. It is, however, reassuring to see that the percentage of plastic bags has dropped since 2013.

Styrofoam: As with plastic bags, the amount of Styrofoam found in the recycling samples was not large on a weight basis (0.09% for the county-wide average), but again this is a very light material and so this amount represents a large amount by volume.

Food Scraps: The amount of food scraps found in the recycling samples was not very large, and was usually the result of scraps left inside of recyclable packaging.

Other Residuals: The other types of non-program contaminants found in the recycling samples included plastic objects, non-recyclable types of paper (such as cups, fiber pots, paper "cans" with metal rims, and envelopes with bubble wrap inside), ceramic dishes, wooden objects, oil bottles, and rubber hoses. The plastic objects found were frequently landscape-related (included sprayers and several flower pots), which could have been in part due to the time of year (since this test was conducted in the spring). The increase of this category (compared to the 2013 results) in the north, central and south

**Table 7
COMPARISON OF RESULTS TO PREVIOUS STUDY**

Type of Material	Bainbridge Island		Other Three Districts	
	2013	2015	2013	2015
Program Materials				
Recyclable Paper	64.1	60.1	60.7	55.1
Newspaper	15.9	15.4	14.4	11.0
Cardboard	8.8	10.6	17.6	15.4
Mixed Paper	38.5	32.7	26.8	27.0
Acceptable Polycoated	0.9	1.5	1.9	1.6
Recyclable Plastic	3.4	3.8	8.3	7.9
Plastic Bottles	3.2	3.6	8.1	7.7
Dairy Tubs	0.2	0.2	0.2	0.2
Recyclable Metals	2.0	2.5	5.1	4.2
Aluminum Cans	0.8	0.8	2.3	1.8
Tin Cans	1.2	1.8	2.8	2.5
Recyclable Glass	25.3	28.1	16.9	22.6
Glass Bottles	14.3	14.5	9.8	15.6
Broken Glass	11.0	13.6	7.1	6.9
Total Program Materials	94.9	94.6	91.0	89.8
Non-Program Materials				
Non-Program Paper	0.5	0.4	1.2	1.0
Unacceptable Polycoated	0	0.02	0.02	0.06
Food-Soiled Paper	0.4	0.4	1.0	0.9
Shredded Paper	0.08	0	0.1	0.06
Non-Program Plastic	1.4	2.1	3.1	2.9
Bags	0.4	0.3	0.8	0.6
Styrofoam	0.02	0.05	0.1	0.1
Other Packaging	0.9	1.7	2.1	2.2
Non-Program Metals	0.5	0.8	0.9	0.7
Scrap Metal	0.5	0.8	0.8	0.7
Aerosol Cans	0.05	0.02	0.1	0.06
Non-Program Glass	0.4	0.03	0.04	0.07
Other	2.3	2.1	3.8	5.6
Food Scraps	0.1	0.1	0.6	1.0
Diapers	0	0	0.04	0.02
Yard Debris	0.01	0.01	0.07	0.1
Other Residuals	2.2	2.0	3.2	4.5
Total Non-Program Materials	5.1	5.4	9.0	10.3

Note: All figures are percentages by weight. The average for the “Other Three Districts” for 2013 is a weighted average based on 23.5% of the materials coming from the north district, 45.9% from the central district, and 30.6% from the south district in 2013. For 2015, the weighted average is based on 23.6% of the materials coming from the north district, 31.7% from the central district, and 44.8% from the south district in 2015.

districts was the major reason for the non-program materials increasing from to 8.8% to 9.5%.

Differences between Districts: The test for statistically-significant differences between the four districts, combined with the data on the amounts collected (in pounds per household per year) can be used to conclude that the recyclables collected from Bainbridge Island residents are different from the other three districts, with:

- a lower percentage of contamination by non-program materials,
- significantly more pounds per household of materials being recycled.

For some of the materials (such as newspaper, mixed paper and glass), it cannot be determined from these results as to whether the larger amounts being recycled by Bainbridge Island residents are the result of higher recycling rates or higher generation rates (i.e., more of these materials being generated and then either recycled or disposed).

ATTACHMENT A

ROUTE SCHEDULE FOR WASTE MANAGEMENT

Table A-1, Route Schedule for Waste Management

Monday Routes:			B1S1	Sandy Hook	North
B1R2	California	South	B1S2	McWilliams/Hwy 303	Central
B1R3	Sherman Heights	South	B1S3	Perry Ave.	Central
B1R4	Lake Flora	South	B1S4	Dickey Rd	Central
B1R5	Madrona	South	B1S5	Olympic View	North
B1R6	Long Lake	South	B1S6	Tracyton	Central
B1R8	City of Port Orchard	South	B1S7	Lofall	North
B1T1	City of Bremerton East	Central	B1S8	Jackson Park	Central
B1T2	Point no Point	North	B1T3	City of Bremerton West	Central
			B1T4	City of Bremerton West	Central
Tuesday Routes:			B2S1	Jefferson Point	North
B2R2	Southworth	South	B2S2	Old Military	Central
B2R3	Sunnyslope	South	B2S3	Illahee	Central
B2R4	Cedar/Bethel	South	B2S4	Dewato	South
B2R5	Jackson/Sedwick	South	B2S5	Stavis Bay/Seabeck	Central
B2R6	Long lake estates	South	B2S6	Palmer/Tracyton	Central
B2R8	City of Port Orchard	South	B2S7	Kingston	North
B2T1	City of Bremerton East	Central	B2S8	Bangor/Keyport	North
B2T2	Rhodadendron	North	B2T3	City of Bremerton West	Central
			B2T4	City of Bremerton West	Central
Wednesday Routes:			B3S1	Indianola	North
B3R2	Colchester	South	B3S2	John Carlson	Central
B3R3	Wildcatlake/Seabeck	South	B3S3	Kariotis	Central
B3R4	Parkview Terrace	South	B3S4	Lake Symington	Central
B3R5	Hortsman	South	B3S5	Mt.View/Silverdale Way	Central
B3R6	Horizon	South	B3S6	Island Lake	Central
B3R8	City of Port Orchard	South	B3S7	Pugh/Lemolo	North
B3T1	City of Bremerton East	Central	B3S8	Silverdale Way/Ridgetop	Central
B3T2	Driftwood Keys	North	B3T3	City of Bremerton West	Central
			B3T4	City of Bremerton West	Central
Thursday Routes:			B4S1	Miller Bay Est.	North
B4R2	Manchester	South	B4S2	Pine RD/East Bremerton	Central
B4R3	Chico Way/Erlands point	Central	B4S3	Trenton	Central
B4R4	Hunter Rd	South	B4S4	El Dorado	Central
B4R5	Lincoln/ Harris	North	B4S5	Keyport	North
B4R6	Banner Rd	South	B4S6	Nels Nelson	Central
B4R8	City of Port Orchard	South	B4S8	Bangor	North
B4T1	City of Bremerton East	Central	B4T3	City of Bremerton West	Central
B4T2	Lofall	North	B4T4	City of Bremerton West	Central
Friday Routes:			B5S1	Suquamish	North
B5R2	Woods Rd/Collins	South	B5S2	Parkwood East	Central
B5R3	Navy Yard City	South	B5S3	Brownsville	Central
B5R4	Glenwood/Sidney	South	B5S4	Provost	Central
B5R5	Conifer Park	South	B5S5	Clear Creek	Central
B5R6	South Olalla	South	B5S6	Fairgrounds	Central
B5R8	City of Port Orchard	South	B5S8	Ridgetop	Central
B5T1	City of Bremerton East	Central	B5T3	City of Bremerton West	Central
B5T2	Gamblewood	North	B5T4	Rocky Point	Central

SORTING FORM

**SAMPLE DATA FORM
KITSAP COUNTY RECYCLING COMPOSITION PROJECT**

Sample #: _____		Hauler/Route: _____	
Date: _____ Time: _____		District (circle one): North Central South BI	
MATERIAL	WEIGHTS	COMMENTS	
PAPER			
Newspaper			
Cardboard			
Mixed Paper			
Acceptable Polycoat		Photo	
Unacc. Polycoated		Photo	
Food-Soiled Paper		Photo	
Shredded Paper			
PLASTIC			
Plastic Bottles		Note % with caps	
Dairy Tubs			
Bags			
Styrofoam			
Other Plastic Pkg.		Photo	
METAL			
Aluminum Cans			
Tin Cans			
Scrap Metal		Photo	
Aerosol Cans			
GLASS			
Glass Bottles			
Broken Glass			
Non-Recyclable		Photo	
OTHER			
Food Scraps		Photo	
Yard Debris			
Diapers			
Other Residuals*		Photo, and describe:	

*** note if sharps are found.**

Comments or problems with load, site, other special conditions: _____

DEFINITIONS FOR SORTING CATEGORIES:

In all cases, recyclable grades of materials shown below must be reasonably clean.

PAPER, including;

Newspaper = newspapers and similar grades of paper, including newspaper inserts if found together.

Cardboard = cardboard boxes and brown paper grocery bags.

Mixed Paper = other grades of recyclable paper, including magazines and catalogs (unless paper is newsprint-grade), office paper, computer paper, junk mail, telephone books, paperboard boxes, egg cartons, and gift wrap without foil or excessive coatings.

Acceptable Polycoated = milk cartons and similar gable-top containers, and frozen food packaging.

Unacceptable Polycoated = juice boxes.

Food-Soiled Paper = paper napkins and pizza boxes, whether food-soiled or not, plus other paper with food contamination.

Shredded Paper = shredded paper (if recoverable), whether in paper or plastic bags.

PLASTIC, including;

Plastic Bottles = plastic bottles of any resin type, with a bottle being defined as a container with a neck that is as wide as or narrower than the body of the bottle. Does not include prescription vials or bottles that were used for motor oil or other toxic materials.

Dairy Tubs = plastic tubs (a tub is a container where the opening is equal to or larger than body of container, and generally used a lid that snapped on or peeled off) that have been used for dairy products (such as yogurt, butter and cool whip).

Bags = all types of plastic bags, including items such as cereal box liners but not including plastic film.

Styrofoam = all types of Styrofoam packaging, peanuts, etc.

Other Plastic Packaging = non-recyclable plastic packaging, primarily clamshells and cups.

METAL, including;

Aluminum Cans = cans made solely of aluminum, not including bi-metal cans or aluminum foil.

Tin Cans = tin-coated steel cans used primarily for food, and including bi-metal cans.

Aerosol Cans = pressurized cans, as long as the contents are less than 25% of the weight.

Scrap Metal = all other ferrous and non-ferrous metals, including aluminum foil and trays.

GLASS, including;

Glass Bottles = all colors of glass bottles. If broken, must include at least half of the bottle.

Broken Glass Bottles = pieces of broken glass bottles.

Non-Recyclable Glass = light bulbs of all types, mirrors, windows, and cookware, but not ceramics.

OTHER, including;

Food Scraps = all types of food waste, including coffee filters and tea bags but not including liquids or large amounts of grease and oil.

Yard Debris = weeds, leaves, grass clippings, branches and other vegetation, including small amounts of soil adhering to plants' roots.

Diapers = diapers of any size.

Other Residuals = non-recyclable paper, prescription vials, plastic bottles that were used for motor oil or other toxic materials, plastic film, nursery pots, other plastic objects, clothing, tires, other rubber products, carpet, wood, construction/demolition wastes, furniture, ceramics, medical waste, etc.

SAMPLE RESULTS

**Table C-1
North District Samples**

North District		PAPER								PLASTIC					
Sample Number	Date Sampled	Newspaper	Cardboard	Mixed Paper	Acc. Polycoated	Unacc Polycoated	Food-Soiled	Shredded	Paper Subtotal	Bottles	Dairy Tubs	Bags	Styrofoam	Other Pkg	Plastic Subtotal
15	4/27/15	14.38%	8.36%	28.99%	1.39%	0.00%	0.50%	1.66%	55.28%	4.43%	0.33%	0.27%	0.17%	3.67%	8.86%
16	4/27/15	15.82%	8.80%	25.62%	0.97%	0.23%	0.34%	0.00%	51.78%	5.33%	0.17%	0.36%	0.17%	1.69%	7.73%
19	4/27/15	14.20%	9.49%	40.49%	1.06%	0.08%	0.24%	0.00%	65.56%	5.08%	0.30%	0.12%	0.00%	1.03%	6.53%
20	4/27/15	15.62%	18.89%	30.74%	1.04%	0.07%	0.44%	0.00%	66.80%	3.10%	0.28%	0.33%	0.00%	1.33%	5.04%
23	4/27/15	21.81%	8.98%	39.76%	0.37%	0.19%	0.07%	0.00%	71.17%	3.26%	0.10%	0.07%	0.00%	0.74%	4.18%
24	4/27/15	14.05%	19.88%	33.06%	2.10%	0.10%	0.16%	0.00%	69.36%	6.07%	0.10%	0.72%	0.10%	1.92%	8.91%
25	4/27/15	9.30%	6.75%	34.56%	1.89%	0.16%	0.25%	0.00%	52.91%	5.50%	0.09%	0.66%	0.16%	2.10%	8.50%
26	4/27/15	4.31%	19.75%	30.09%	3.77%	0.09%	3.30%	0.00%	61.32%	14.44%	0.18%	2.08%	0.27%	2.51%	19.48%
27	4/27/15	3.26%	27.63%	17.08%	2.04%	0.00%	1.20%	0.00%	51.21%	11.76%	0.11%	1.37%	0.11%	0.94%	14.30%
30	4/27/15	8.76%	17.10%	36.15%	0.63%	0.00%	0.35%	0.00%	62.99%	4.83%	0.18%	0.21%	0.00%	0.77%	5.99%
47	4/27/15	11.45%	6.04%	34.40%	2.07%	0.08%	0.64%	0.00%	54.67%	6.29%	0.24%	0.57%	0.00%	1.34%	8.44%
48	4/27/15	7.77%	9.30%	29.93%	3.18%	0.00%	0.19%	0.00%	50.37%	4.14%	0.16%	0.19%	0.00%	2.55%	7.04%
Average		11.73%	13.41%	31.74%	1.71%	0.08%	0.64%	0.14%	59.45%	6.19%	0.19%	0.58%	0.08%	1.72%	8.75%
Std Deviation		0.051	0.066	0.061	0.010	0.001	0.009	0.005	0.073	0.033	0.001	0.006	0.001	0.008	0.041
LCL		9.32%	10.28%	28.86%	1.25%	0.05%	0.24%	0.00%	56.01%	4.64%	0.15%	0.31%	0.04%	1.32%	6.83%
UCL		14.13%	16.55%	34.62%	2.17%	0.12%	1.04%	0.36%	62.90%	7.74%	0.22%	0.85%	0.13%	2.11%	10.67%

LCL = Lower Confidence Limit and UCL = Upper Confidence Limit, at the 90% confidence interval.

**Table C-1, Continued
North District Samples**

North District		METALS					GLASS				OTHER				
Sample Number	Date Sampled	Aluminum Cans	Tin Cans	Scrap Metal	Aerosol Cans	Metals Subtotal	Glass Bottles	Broken	Non-Recy Glass	Glass Subtotal	Food	Yard Debris	Diapers	Other Residuals	Other Subtotal
15	4/27/15	1.90%	2.12%	1.05%	0.00%	5.08%	6.97%	8.41%	0.00%	15.38%	0.89%	0.00%	0.00%	14.52%	15.40%
16	4/27/15	2.01%	2.42%	3.46%	0.00%	7.89%	4.33%	16.55%	0.00%	20.88%	0.63%	0.11%	1.37%	9.62%	11.73%
19	4/27/15	1.69%	2.18%	0.53%	0.00%	4.40%	14.38%	4.31%	0.00%	18.69%	2.27%	0.08%	0.00%	2.48%	4.82%
20	4/27/15	1.27%	2.08%	1.11%	0.00%	4.46%	19.05%	3.32%	0.00%	22.37%	0.42%	0.03%	0.00%	0.89%	1.33%
23	4/27/15	0.74%	2.15%	0.00%	0.00%	2.89%	15.06%	5.04%	0.00%	20.10%	0.84%	0.00%	0.00%	0.82%	1.65%
24	4/27/15	0.64%	1.36%	0.10%	0.00%	2.10%	9.38%	6.47%	0.40%	16.25%	0.90%	0.00%	0.00%	2.48%	3.38%
25	4/27/15	1.44%	0.74%	0.00%	0.00%	2.18%	25.62%	8.52%	0.00%	34.13%	0.09%	0.09%	0.00%	2.10%	2.27%
26	4/27/15	3.59%	2.30%	2.15%	0.00%	8.04%	2.43%	1.01%	0.90%	4.33%	1.80%	0.00%	0.00%	5.03%	6.82%
27	4/27/15	2.92%	1.89%	0.00%	0.00%	4.81%	7.08%	3.69%	0.00%	10.77%	1.29%	0.04%	0.86%	16.73%	18.92%
30	4/27/15	0.42%	1.47%	0.09%	0.18%	2.16%	23.12%	2.66%	0.00%	25.78%	0.35%	0.00%	0.00%	2.73%	3.08%
47	4/27/15	2.48%	2.10%	1.78%	0.32%	6.68%	16.47%	10.62%	0.24%	27.33%	1.35%	0.00%	0.00%	1.53%	2.88%
48	4/27/15	1.40%	1.72%	0.03%	0.00%	3.15%	23.05%	8.28%	0.00%	31.33%	0.08%	0.00%	0.00%	8.02%	8.11%
Average		1.71%	1.88%	0.86%	0.04%	4.49%	13.91%	6.57%	0.13%	20.61%	0.91%	0.03%	0.19%	5.58%	6.70%
Std Deviation		0.009	0.005	0.011	0.001	0.020	0.075	0.041	0.003	0.081	0.006	0.000	0.004	0.052	0.055
LCL		1.28%	1.66%	0.36%	0.00%	3.52%	10.35%	4.65%	0.00%	16.78%	0.60%	0.01%	0.00%	3.10%	4.08%
UCL		2.14%	2.09%	1.36%	0.09%	5.45%	17.47%	8.50%	0.25%	24.44%	1.21%	0.05%	0.39%	8.05%	9.32%

LCL = Lower Confidence Limit and UCL = Upper Confidence Limit, at the 90% confidence interval.

**Table C-2
Central District Samples**

Central Dist.		PAPER								PLASTIC					
Sample Number	Date Sampled	Newspaper	Cardboard	Mixed Paper	Acc. Polycoated	Unacc Polycoated	Food-Soiled	Shredded	Paper Subtotal	Bottles	Dairy Tubs	Bags	Styrofoam	Other Pkg	Plastic Subtotal
11	4/27/15	14.35%	11.25%	31.22%	1.54%	0.00%	0.25%	0.00%	58.61%	5.33%	0.19%	0.25%	0.06%	0.94%	6.76%
12	4/27/15	12.55%	18.78%	25.65%	1.42%	0.06%	0.54%	0.00%	59.01%	3.85%	0.19%	0.30%	0.06%	2.08%	6.48%
13	4/27/15	16.89%	12.11%	29.00%	0.88%	0.00%	0.64%	0.00%	59.53%	6.76%	0.48%	0.57%	0.08%	2.61%	10.51%
14	4/27/15	12.82%	8.78%	29.54%	1.19%	0.12%	1.20%	0.00%	53.65%	9.38%	0.31%	0.70%	0.05%	1.60%	12.04%
17	4/27/15	7.54%	14.91%	35.93%	2.89%	0.08%	0.30%	0.00%	61.65%	4.13%	0.15%	0.66%	0.08%	1.14%	6.16%
18	4/27/15	13.21%	18.07%	22.43%	1.70%	0.09%	0.71%	0.00%	56.22%	6.57%	0.27%	1.43%	0.09%	1.29%	9.65%
21	4/27/15	5.45%	16.50%	30.42%	2.03%	0.10%	1.25%	0.00%	55.75%	7.44%	0.28%	0.29%	0.10%	1.25%	9.36%
22	4/27/15	13.81%	9.03%	27.31%	1.44%	0.19%	0.72%	0.00%	52.49%	6.90%	0.10%	0.30%	0.04%	0.83%	8.18%
43	4/27/15	14.66%	17.75%	33.15%	2.02%	0.00%	0.89%	0.00%	68.47%	5.40%	0.08%	0.71%	0.15%	3.50%	9.84%
44	4/27/15	15.69%	14.07%	29.75%	1.80%	0.00%	1.02%	0.00%	62.33%	5.33%	0.15%	0.24%	0.08%	1.20%	7.00%
45	4/27/15	8.82%	22.78%	19.61%	1.35%	0.16%	1.40%	0.95%	55.06%	4.63%	0.40%	2.22%	0.00%	2.03%	9.28%
46	4/27/15	15.41%	19.65%	28.45%	1.25%	0.08%	0.94%	0.00%	65.77%	3.99%	0.31%	1.00%	0.16%	1.43%	6.89%
Average		12.60%	15.31%	28.54%	1.63%	0.07%	0.82%	0.08%	59.05%	5.81%	0.24%	0.72%	0.08%	1.66%	8.51%
Std Deviation		0.034	0.042	0.042	0.005	0.001	0.003	0.003	0.046	0.016	0.001	0.006	0.000	0.007	0.018
LCL		11.01%	13.32%	26.53%	1.39%	0.04%	0.66%	0.00%	56.85%	5.06%	0.19%	0.45%	0.06%	1.31%	7.66%
UCL		14.20%	17.30%	30.55%	1.86%	0.10%	0.99%	0.20%	61.25%	6.56%	0.30%	0.99%	0.10%	2.01%	9.36%

LCL = Lower Confidence Limit and UCL = Upper Confidence Limit, at the 90% confidence interval.

**Table C-2, Continued
Central District Samples**

Central Dist.		METALS					GLASS				OTHER				
Sample Number	Date Sampled	Aluminum Cans	Tin Cans	Scrap Metal	Aerosol Cans	Metals Subtotal	Glass Bottles	Broken	Non-Recy Glass	Glass Subtotal	Food	Yard Debris	Diapers	Other Residuals	Other Subtotal
11	4/27/15	1.73%	1.38%	0.19%	0.25%	3.54%	24.66%	4.83%	0.19%	29.68%	0.06%	0.00%	0.00%	1.33%	1.40%
12	4/27/15	1.04%	1.53%	0.68%	0.00%	3.25%	22.58%	5.93%	0.06%	28.58%	0.68%	0.02%	0.00%	1.98%	2.68%
13	4/27/15	1.91%	1.47%	1.27%	0.00%	4.65%	19.69%	0.64%	0.40%	20.72%	1.27%	0.00%	0.00%	3.31%	4.59%
14	4/27/15	2.05%	2.74%	0.06%	0.12%	4.98%	22.06%	4.39%	0.00%	26.45%	1.31%	0.02%	0.00%	1.55%	2.88%
17	4/27/15	0.60%	1.74%	2.69%	0.00%	5.03%	14.52%	0.30%	0.00%	14.82%	1.87%	0.03%	0.08%	10.36%	12.34%
18	4/27/15	1.64%	2.21%	2.95%	0.00%	6.81%	17.25%	1.43%	0.00%	18.68%	2.50%	0.00%	0.00%	6.14%	8.64%
21	4/27/15	0.96%	2.65%	0.10%	0.10%	3.80%	20.55%	4.27%	0.00%	24.82%	0.46%	0.00%	0.00%	5.80%	6.27%
22	4/27/15	2.96%	2.58%	0.19%	0.00%	5.73%	20.03%	5.54%	0.00%	25.56%	3.41%	0.00%	0.00%	4.63%	8.04%
43	4/27/15	1.19%	2.43%	0.97%	0.00%	4.59%	9.38%	5.12%	0.00%	14.50%	1.04%	0.08%	0.00%	1.48%	2.60%
44	4/27/15	1.26%	3.05%	0.08%	0.00%	4.39%	19.34%	3.14%	0.00%	22.49%	0.83%	0.15%	0.00%	2.81%	3.79%
45	4/27/15	1.84%	4.51%	0.56%	0.24%	7.14%	21.70%	3.43%	0.00%	25.13%	0.40%	0.00%	0.00%	2.98%	3.38%
46	4/27/15	1.25%	2.25%	2.11%	0.24%	5.84%	14.47%	3.12%	0.16%	17.75%	0.31%	0.00%	0.00%	3.43%	3.74%
Average		1.53%	2.38%	0.99%	0.08%	4.98%	18.85%	3.51%	0.07%	22.43%	1.18%	0.03%	0.01%	3.82%	5.03%
Std Deviation		0.006	0.008	0.010	0.001	0.012	0.041	0.018	0.001	0.049	0.009	0.000	0.000	0.025	0.031
LCL		1.25%	1.99%	0.51%	0.03%	4.43%	16.91%	2.66%	0.01%	20.11%	0.73%	0.00%	0.00%	2.63%	3.58%
UCL		1.82%	2.77%	1.46%	0.13%	5.53%	20.79%	4.36%	0.12%	24.76%	1.63%	0.05%	0.02%	5.00%	6.48%

LCL = Lower Confidence Limit and UCL = Upper Confidence Limit, at the 90% confidence interval.

**Table C-3
South District Samples**

South Dist.		PAPER								PLASTIC					
Sample Number	Date Sampled	Newspaper	Cardboard	Mixed Paper	Acc. Polycoated	Unacc Polycoated	Food-Soiled	Shredded	Paper Subtotal	Bottles	Dairy Tubs	Bags	Styrofoam	Other Pkg	Plastic Subtotal
1	4/24/15	14.57%	26.45%	22.49%	1.22%	0.00%	1.37%	0.00%	66.09%	10.06%	0.61%	1.30%	0.30%	3.23%	15.50%
2	4/24/15	8.73%	21.47%	21.11%	1.80%	0.00%	0.84%	0.00%	53.95%	9.49%	0.20%	0.88%	0.07%	4.94%	15.57%
3	4/24/15	6.17%	18.83%	27.59%	1.69%	0.00%	0.85%	0.00%	55.12%	7.93%	0.52%	0.41%	0.20%	3.32%	12.38%
4	4/24/15	6.79%	23.80%	22.51%	0.96%	0.06%	0.48%	0.00%	54.60%	7.93%	0.12%	0.76%	0.12%	2.49%	11.42%
5	4/24/15	0.92%	10.52%	17.23%	0.97%	0.09%	0.49%	0.00%	30.23%	7.91%	0.27%	0.07%	0.18%	1.91%	10.33%
6	4/24/15	7.12%	11.89%	24.90%	0.52%	0.09%	0.26%	0.00%	44.79%	9.47%	0.09%	0.41%	0.09%	1.59%	11.66%
7	4/24/15	6.56%	13.49%	28.31%	2.99%	0.08%	1.01%	0.16%	52.60%	11.60%	0.24%	0.69%	0.16%	3.03%	15.72%
8	4/24/15	9.05%	14.81%	29.15%	1.82%	0.00%	1.06%	0.00%	55.88%	9.19%	0.25%	0.40%	0.09%	2.12%	12.04%
9	4/24/15	3.58%	20.85%	24.18%	2.16%	0.00%	2.41%	0.00%	53.18%	11.23%	0.23%	0.74%	0.15%	3.45%	15.81%
10	4/24/15	16.07%	9.14%	25.75%	2.10%	0.03%	1.01%	0.00%	54.11%	12.24%	0.26%	0.47%	0.09%	2.15%	15.20%
28	4/27/15	9.50%	23.00%	16.29%	1.91%	0.21%	1.87%	0.00%	52.78%	13.83%	0.32%	1.02%	0.00%	3.73%	18.91%
29	4/27/15	25.50%	3.13%	20.41%	1.23%	0.00%	0.43%	0.00%	50.69%	6.56%	0.31%	0.18%	0.15%	2.21%	9.41%
Average		9.55%	16.45%	23.33%	1.61%	0.05%	1.01%	0.01%	52.00%	9.79%	0.28%	0.61%	0.13%	2.85%	13.66%
Std Deviation		0.062	0.067	0.040	0.006	0.001	0.006	0.000	0.080	0.020	0.001	0.003	0.001	0.009	0.027
LCL		6.59%	13.26%	21.46%	1.31%	0.02%	0.72%	0.00%	48.21%	8.83%	0.22%	0.45%	0.10%	2.42%	12.38%
UCL		12.50%	19.64%	25.20%	1.92%	0.08%	1.29%	0.03%	55.79%	10.74%	0.35%	0.77%	0.17%	3.28%	14.95%

LCL = Lower Confidence Limit and UCL = Upper Confidence Limit, at the 90% confidence interval.

Table C-3, Continued
South District Samples

South Dist.		METALS					GLASS				OTHER				
Sample Number	Date Sampled	Aluminum Cans	Tin Cans	Scrap Metal	Aerosol Cans	Metals Subtotal	Glass Bottles	Broken	Non-Recy Glass	Glass Subtotal	Food	Yard Debris	Diapers	Other Residuals	Other Subtotal
1	4/24/15	2.67%	2.38%	0.00%	0.00%	5.05%	4.57%	5.03%	0.00%	9.60%	1.91%	0.03%	0.00%	1.83%	3.77%
2	4/24/15	2.73%	3.19%	0.13%	0.00%	6.05%	12.42%	8.13%	0.00%	20.56%	0.32%	0.00%	0.00%	3.55%	3.88%
3	4/24/15	1.76%	2.70%	0.20%	0.00%	4.66%	12.45%	5.70%	0.00%	18.15%	0.33%	0.00%	0.13%	9.23%	9.69%
4	4/24/15	1.50%	0.96%	0.12%	0.00%	2.57%	17.33%	9.32%	0.00%	26.65%	0.90%	0.02%	0.30%	3.54%	4.76%
5	4/24/15	1.62%	3.88%	0.09%	0.00%	5.60%	14.55%	34.42%	0.00%	48.97%	2.47%	0.00%	0.00%	2.40%	4.87%
6	4/24/15	1.94%	2.35%	0.09%	0.00%	4.38%	17.08%	19.88%	0.00%	36.96%	0.35%	0.00%	0.00%	1.87%	2.21%
7	4/24/15	2.77%	3.34%	0.08%	0.00%	6.20%	14.18%	6.30%	0.16%	20.65%	0.47%	0.00%	0.08%	4.29%	4.84%
8	4/24/15	1.98%	3.11%	0.09%	0.17%	5.34%	12.43%	10.38%	0.00%	22.80%	0.33%	0.09%	0.42%	3.11%	3.94%
9	4/24/15	2.04%	3.58%	2.31%	0.00%	7.93%	12.40%	4.63%	0.00%	17.03%	1.22%	0.00%	0.39%	4.44%	6.05%
10	4/24/15	2.42%	3.50%	0.34%	0.34%	6.59%	14.66%	5.31%	0.34%	20.30%	0.10%	0.00%	0.00%	3.70%	3.80%
28	4/27/15	0.42%	2.38%	0.04%	0.00%	2.84%	14.60%	0.41%	0.00%	15.00%	1.38%	0.00%	0.00%	9.08%	10.46%
29	4/27/15	1.53%	2.27%	0.23%	0.23%	4.27%	24.46%	5.21%	0.00%	29.67%	0.08%	0.00%	0.00%	5.88%	5.96%
Average		1.95%	2.80%	0.31%	0.06%	5.12%	14.26%	9.56%	0.04%	23.86%	0.82%	0.01%	0.11%	4.41%	5.35%
Std Deviation		0.006	0.008	0.006	0.001	0.015	0.044	0.087	0.001	0.102	0.007	0.000	0.002	0.024	0.023
LCL		1.65%	2.44%	0.02%	0.01%	4.43%	12.19%	5.42%	0.00%	19.05%	0.47%	0.00%	0.04%	3.28%	4.25%
UCL		2.25%	3.17%	0.60%	0.11%	5.81%	16.33%	13.70%	0.09%	28.67%	1.17%	0.02%	0.18%	5.54%	6.46%

LCL = Lower Confidence Limit and UCL = Upper Confidence Limit, at the 90% confidence interval.

**Table C-4
Bainbridge Island Samples**

Bainbridge		PAPER								PLASTIC					
Sample Number	Date Sampled	Newspaper	Cardboard	Mixed Paper	Acc. Polycoated	Unacc Polycoated	Food-Soiled	Shredded	Paper Subtotal	Bottles	Dairy Tubs	Bags	Styrofoam	Other Pkg	Plastic Subtotal
31	4/27/15	16.52%	16.58%	28.29%	1.78%	0.00%	0.18%	0.00%	63.36%	4.52%	0.30%	0.42%	0.23%	1.78%	7.24%
32	4/27/15	10.94%	8.96%	30.56%	1.53%	0.00%	0.93%	0.00%	52.93%	3.96%	0.44%	0.41%	0.00%	1.28%	6.08%
33	4/27/15	21.86%	7.82%	34.03%	1.24%	0.08%	0.25%	0.00%	65.28%	1.92%	0.08%	0.25%	0.00%	1.30%	3.56%
34	4/27/15	18.71%	15.88%	24.30%	1.81%	0.00%	0.50%	0.00%	61.20%	3.08%	0.24%	0.50%	0.08%	1.19%	5.09%
35	4/27/15	11.16%	5.65%	26.90%	1.58%	0.00%	0.33%	0.00%	45.62%	3.65%	0.33%	0.27%	0.09%	1.86%	6.20%
36	4/27/15	14.92%	15.57%	39.85%	1.31%	0.00%	0.59%	0.00%	72.24%	3.14%	0.16%	0.20%	0.03%	1.44%	4.97%
37	4/27/15	18.56%	12.36%	33.45%	1.66%	0.00%	0.14%	0.00%	66.16%	4.02%	0.07%	0.11%	0.03%	2.07%	6.31%
38	4/27/15	12.33%	11.41%	26.38%	1.53%	0.15%	0.37%	0.00%	52.18%	3.62%	0.15%	0.12%	0.00%	2.09%	5.98%
39	4/27/15	11.26%	7.16%	53.67%	2.16%	0.00%	0.32%	0.00%	74.58%	3.97%	0.08%	0.13%	0.08%	1.92%	6.18%
40	4/27/15	18.59%	7.18%	30.49%	0.57%	0.00%	0.49%	0.00%	57.32%	3.07%	0.25%	0.07%	0.08%	1.57%	5.03%
41	4/27/15	12.50%	8.82%	31.28%	1.34%	0.00%	0.42%	0.00%	54.36%	4.55%	0.17%	0.40%	0.00%	1.80%	6.92%
42	4/27/15	17.32%	9.28%	32.99%	1.67%	0.00%	0.27%	0.00%	61.54%	3.66%	0.35%	1.06%	0.04%	2.25%	7.35%
Average		15.39%	10.56%	32.68%	1.52%	0.02%	0.40%	0.00%	60.56%	3.60%	0.22%	0.33%	0.05%	1.71%	5.91%
Std Deviation		0.035	0.036	0.075	0.004	0.000	0.002	0.000	0.081	0.007	0.001	0.003	0.001	0.003	0.010
LCL		13.71%	8.85%	29.15%	1.34%	0.00%	0.30%	0.00%	56.71%	3.27%	0.17%	0.20%	0.03%	1.55%	5.42%
UCL		17.07%	12.26%	36.22%	1.69%	0.04%	0.50%	0.00%	64.42%	3.92%	0.27%	0.45%	0.08%	1.87%	6.40%

LCL = Lower Confidence Limit and UCL = Upper Confidence Limit, at the 90% confidence interval.

**Table C-4, Continued
Bainbridge Island Samples**

Bainbridge		METALS					GLASS				OTHER				
Sample Number	Date Sampled	Aluminum Cans	Tin Cans	Scrap Metal	Aerosol Cans	Metals Subtotal	Glass Bottles	Broken	Non-Recy Glass	Glass Subtotal	Food	Yard Debris	Diapers	Other Residuals	Other Subtotal
31	4/27/15	0.42%	1.60%	7.73%	0.00%	9.75%	12.13%	4.16%	0.37%	16.66%	0.08%	0.00%	0.00%	2.91%	2.99%
32	4/27/15	0.81%	1.69%	0.08%	0.00%	2.58%	11.12%	24.96%	0.00%	36.08%	0.29%	0.00%	0.00%	2.04%	2.33%
33	4/27/15	0.56%	1.30%	0.39%	0.00%	2.25%	11.24%	13.66%	0.00%	24.90%	0.03%	0.00%	0.00%	3.97%	4.01%
34	4/27/15	0.44%	0.82%	0.24%	0.00%	1.49%	13.88%	17.58%	0.00%	31.46%	0.00%	0.00%	0.00%	0.75%	0.75%
35	4/27/15	1.20%	2.32%	0.00%	0.09%	3.61%	24.25%	16.54%	0.00%	40.79%	0.66%	0.00%	0.00%	3.12%	3.79%
36	4/27/15	0.52%	1.80%	0.03%	0.16%	2.52%	11.71%	7.20%	0.00%	18.91%	0.25%	0.00%	0.00%	1.11%	1.36%
37	4/27/15	1.03%	1.61%	0.00%	0.00%	2.64%	14.31%	7.18%	0.00%	21.49%	0.00%	0.00%	0.00%	3.39%	3.39%
38	4/27/15	0.92%	2.15%	0.46%	0.00%	3.53%	22.39%	14.36%	0.00%	36.75%	0.03%	0.00%	0.00%	1.53%	1.56%
39	4/27/15	0.90%	1.47%	0.08%	0.00%	2.45%	10.56%	4.80%	0.00%	15.35%	0.03%	0.00%	0.00%	1.41%	1.44%
40	4/27/15	0.72%	2.28%	0.16%	0.00%	3.16%	12.66%	20.88%	0.00%	33.53%	0.08%	0.08%	0.00%	0.78%	0.95%
41	4/27/15	0.80%	2.61%	0.09%	0.00%	3.50%	14.57%	18.98%	0.00%	33.55%	0.00%	0.00%	0.00%	1.67%	1.67%
42	4/27/15	0.70%	1.62%	0.09%	0.00%	2.41%	14.70%	13.01%	0.00%	27.71%	0.00%	0.00%	0.00%	0.98%	0.98%
Average		0.75%	1.77%	0.78%	0.02%	3.32%	14.46%	13.61%	0.03%	28.10%	0.12%	0.01%	0.00%	1.97%	2.10%
Std Deviation		0.002	0.005	0.021	0.000	0.020	0.042	0.064	0.001	0.082	0.002	0.000	0.000	0.011	0.011
LCL		0.64%	1.55%	0.00%	0.00%	2.37%	12.47%	10.60%	0.00%	24.23%	0.03%	0.00%	0.00%	1.47%	1.58%
UCL		0.86%	2.00%	1.77%	0.04%	4.28%	16.45%	16.62%	0.08%	31.97%	0.21%	0.02%	0.00%	2.47%	2.63%

LCL = Lower Confidence Limit and UCL = Upper Confidence Limit, at the 90% confidence interval.