Final Report

Recycling Capture Rate Assessment

Mecklenburg County Schools and Offices

April 2005

R·W·BECK

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RECYCLING CAPTURE RATE ASSESSMENT
Mecklenburg County Schools and Offices

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Section 1
INTRODUCTION

R.W. Beck was charged with determining the effectiveness of current paper recycling efforts in the public schools and county office buildings, and identifying further diversion opportunities within the existing recovery system. Field visits and visual waste composition analysis were used to measure the system performance for one week in November, 2004, and both qualitative and quantitative data were factored in to the recommendations.

1.1 Choosing Schools and Offices for Sampling

Working with County representatives, RW Beck team members developed the following list of criteria for choosing Paperchase participants for the composition study:

- balanced geographic representation,
- a mix of elementary, middle and high schools based on student populations,
- a mix of county office buildings and facilities, and
- a mix of high, average, and poor recycling performers.

Using these criteria and with further consultation with County representatives, a representative sampling plan was developed. Twenty-six locations were chosen for study, consisting of twenty schools and six other County facilities. To assist in sampling and managing logistics, both trash collection and recycling data were gathered about each facility. Recycling observations are not discussed in this report, but are presented in Table 4.

Facility names and information are presented in Table 1. Due to the trash collection schedules at these facilities, some substitutions were made in the field where dumpsters were found empty. Names crossed out were not used. A * next to a facility name indicates that it was a substitute.

Table 1-1
Final Targeted Paperchase Sampling Locations

NAME	STOP	TYPE	T-DAYS	T-DUMP	R-DAYS	R-DUMP	RTE	GROUP	DAY
Independence	38	HS	M-F	8-YD: 2	M,TH	8-YD:1	54	1	MON
Albemarle Rd	34	MS	M-F	8-YD: 2	TH	8-YD: 1	54	1	MON
Albemarle Road	35	ES	M-F	6-YD: 1	M,TH	6-YD: 1	54	1	MON
Alb Road Rec Facility	33	PK/REC	M	4-YD: 1	TH	4-YD: 1	54	1	MON
Elizabeth Lane	18	ES	M-F	6-YD: 2	M,TH	6-YD: 2	54	1	MON
Providence Road	17	HS	M-F	8-YD: 3	TH	8-YD: 1	54	1	MON
Morehead	41	ES	M-F	8-YD: 3	M,TH	8-YD: 2	53	2	TUE
Nat. Alexander	40	ES	M-F	8-YD: 3	TH	8-YD:1	53	2	TUE
~~Martin~~ Park Rd. Montessori*	~~39~~ 38	~~MS~~ ES	M-F	8-YD: 2	M	8-YD:1	~~53~~ 52	2	TUE
Vance	38	HS	M-F	8-YD: 4	M	8-YD: 2	53	2	TUE
Hal Marshall Center	N/A	BLD/GD	M-F	8-YD: 1	M,TH	8-YD: 1	53	2	TUE
Myers Park	37	HS	M-F	8-YD: 6	M,TH	8-YD: 2	52	3	WED
Selwyn	39	ES	M-F	8-YD: 3	TH	8-YD: 1	52	3	WED
Alex Graham	40	MS	M-F	8-YD: 2	M,TH	6-YD: 1	52	3	WED
S. Billings Ctr	48	BLD/GD	M,W,F	8-YD: 2	M,TH	4-YD: 1	52	3	WED
Carlton Watkins Center	N/A	BLD/GD	M,TH	8-YD: 1	TH	4-YD: 1	52	3	WED
CPCC West campus	N/A	CPCC	M,TH	8-YD: 1	TH	8-YD: 1	52	3	WED
West Mecklenburg	4	HS	M-F	8-YD: 2	M	8-YD: 1	52	4	TH
~~Wilson~~ Bishop Spaugh *	~~3~~ ~~15~~	MS	M-F	8-YD: 2	M	8-YD: 2	52	4	TH
~~Tuckaseegee~~ Marie Davis *	~~2~~ 18	~~ES~~ MS	M-F	8-YD: 1	M	8-YD: 2	52	4	TH
~~Thomasboro~~ Ashley Park *	~~N/A~~ 20	ES	M,W,F	8-YD: 1	M	8-YD: 1	52	4	TH
Meck. Co. Parks/Rec Offices	N/A	PK/REC	M	8-YD: 1	M,TH	8-YD: 1	52	4	TH
South Mecklenburg	1	HS	M-F	8-YD: 4	TH	8-YD: 2	54	5	FRI
Smithfield	2	ES	M,W,F	8-YD: 2	TH	8-YD: 1	54	5	FRI
Quail Hollow	3	MS	M-F	8-YD: 2	M,TH	8-YD: 1	54	5	FRI
Beverly Woods	4	ES	M,W,F	8-YD: 2	TH	8-YD: 1	54	5	FRI

Section 2
VISUAL ASSESSMENT OF SELECTED SCHOOLS/OFFICES WASTE

2.1 Methodology

2.1.1 Check-in/Initial Determination of 'Qualified' Trash Present

On-site audits were conducted during the week of November 15-19, 2004 by a team of two field auditors. At each school, auditors first checked in with the Principal's office to notify school officials of the auditors' presence on-site. At all sites, dumpsters were located and verified against the list for number, type and capacity. An initial look inside the dumpsters determined whether or not there was enough of the proper type of waste present at that time to meet the sampling protocol—defined as four bags of trash per dumpster. Bags that were observed to be more than 90 percent putrescible food waste from the cafeterias were excluded, because they were too heavy to remove from the dumpsters, they were messy, and they would most likely have yielded no recyclable paper. Where the contents were not obvious due to opaque bags, auditors probed and broke bags open to determine the type of trash. If there was not enough non-cafeteria trash in the respective dumpster at that time, a note was made and the auditors left for the next site, to return later when there was enough trash to perform the audit.

2.1.2 Visual Assessments – General Information

Once enough trash had accumulated in a dumpster to perform the audit, a visual assessment was performed. Information was recorded including number, type, capacity and location of dumpsters, percent full before removing bags, general conditions of the site and dumpsters, and any pertinent additional observations. This assessment level was conducted for both trash and recycling dumpsters.

2.1.3 Visual Assessments – Bagged and Loose Trash

At least four bags of trash were removed. In some cases, two smaller bags were counted as one large bag. The bags were broken open and contents spread out on a sheet of 1 mil plastic (painters' drop cloth). Smaller bags of trash nested within larger bags were also opened and contents added to the pile. Material was spread as evenly as possible and at least two photographs were taken at each site. The auditors raked and poked through the material and evaluated the components based on percent volume in the sample.

The percentage composition by volume of the total waste stream was estimated for the following categories of waste:

- % OCC (cardboard boxes)
- % Other recyclable paper (white ledger & other)
- % Other materials (including rough characterization)

Once the assessment was complete, the material was put back in bags and/or gathered in the plastic sheet and returned to the dumpster.

Additionally, loose bulky waste and loose OCC (cardboard boxes) were noted when they were present in the dumpsters. An estimate of the volume capacity of these materials was made.

2.1.4 Visual Assessment – Recycling Dumpsters

Contents of recycling dumpsters were examined without removing any materials. Auditors recorded the percent full and noted the type(s) of recyclables and/or contaminants present.

2.2 Schools' Audit Results

Table 2 summarizes the field data and projections for the school sites audited. Visual audit conclusions and observations related to the school programs are presented in subsequent subsections.

2.2.1 Visual Audit Conclusions

- These projections assume that the sampled waste was representative of the waste generated at the sampled schools, that the sampled school waste streams were representative of the waste from all of the schools, and that the weekly tonnage of total waste generated in November was representative of the school-system-wide waste stream generated year round. These assumptions may vary from reality to an extent that is undetermined. Additionally, data gathered from visual sampling alone is inherently imprecise. While it can be used to gather useful information about potential recycling opportunities for planning and decision making purposes, it is not reliable as a source of precise, scientifically verifiable data upon which to draw specific conclusions regarding material quantities.
- Based on visual assessment and viewing the contents of several bags, auditors estimated that cafeteria waste, consisting mostly of foodservice waste and virtually no paper, comprised 50 percent by volume of the overall waste observed. Assessment of the bulky waste found that it could be expected to comprise approximately one percent by volume of waste in any given dumpster. Loose OCC, a recoverable material, was calculated to comprise an average of about five percent by volume of the waste. Given these estimates, bagged waste from classrooms, offices, and other in-school sources that may contain recoverable

paper could comprise a total of approximately 44 percent by volume of the waste stream from which samples were selected.

- Using the route sheets supplied by the County for the dedicated front-end loader trash truck, a count of the number of cubic yards of waste picked up from schools and the number picked up from offices showed that approximately 80 percent of the waste by volume originates in the schools and approximately 20 percent originates in the offices and other County facilities. Density estimates for school waste and office waste were applied to these volume figures to extrapolate the percentages by weight of the schools waste and the office waste. Using this methodology it is estimated that, by weight, 83 percent of the waste originates in schools and 17 percent originates in offices. When these percentages were applied to the reported average weekly weight data for both trash and recycling for the month of November 2004 supplied by the County, it was estimated that the schools generated an average of approximately 215 tons of trash per week, and recycled an average of approximately 23 tons per week of paper including OCC.
- Based on the visual observations in the field, the average percentage of recyclable paper in the samples was estimated to be about 47 percent. Taking 47 percent of the 44 percent of the school waste that is not cafeteria waste, bulky waste, or loose OCC suggests that approximately 21 percent of this waste could be recoverable paper by volume. Twenty-one percent of the 8,294 cubic yards of waste collected from the schools weekly, as found in the route sheets provided by the County, is 1,715 cubic yards. This is the estimate of the potential amount of recyclable paper in a week's worth of school trash. Converting this to tons using a density estimate of 150 lbs/cubic yard suggests that, system-wide, an additional 129 tons of recyclable paper could be recovered over the course of a week, assuming it was all clean and uncontaminated.
- The volume estimates for recovery assume that all of the dumpsters would be full when picked up. However, a comparison of the cubic yards collected from the route sheets with the actual weight figures provided by the County suggests that the dumpsters collected during the weeks of the study were only 57 percent full. While this is only one calculation done over a week's time, if we assume that the dumpsters are only 57 percent full on average in any given week, then the amount of potentially recyclable paper would be only 57 percent of the 129 tons, or 73 tons.
- Recoverable cardboard was present in seven of the twenty-five dumpsters examined. Some was broken down and some was whole boxes. Overall, the volume of OCC averaged about five percent by volume based on the visual estimates. Using the same calculations as above, and a density estimate of 100 lbs per cubic yard for OCC, potentially an additional 12 tons of OCC could be recovered weekly from the school waste stream. The total potentially recyclable paper and cardboard remaining in the schools' waste stream is then approximately 85 tons per week.
- If the schools are recycling an average of 23 tons of paper and cardboard, and an additional 85 tons per week is remaining in the waste stream, then the school

recycling program is only recovering about 21 percent of the amount of recyclable paper and OCC in the waste stream.

- If an additional 85 tons of paper was recycled from the schools' waste stream weekly, it would represent about a 40 percent reduction in the waste disposed by weight.
- These calculations assume that 100 percent of the potentially recyclable paper remaining in the waste stream is recovered. It may be more realistic to set a more modest percent recovery goal.

2.2.2 General Observations

- Cafeteria waste typically is the first trash to be put in dumpsters, usually beginning after 11 am. In some cases, where breakfast is served (mostly in elementary schools), cafeteria waste appears earlier. Cafeteria waste continues to be brought out until after all meals have been served.
- The remainder of schools' trash (non-cafeteria) is typically not retrieved from offices and classrooms until after students leave; mostly after 4 pm, some not until after 6 pm.
- Custodial schedules vary, and appear to be designed around school being out for the day.
- All schools appear to have their dumpsters pulled before 6 am. Some may be pulled as early as 3 or 4 am.
- Many dumpster lids are in disrepair.
- Bulky items are found to cause problems when placed inside dumpsters.
- Observation of bagged trash samples suggests that many schools have separate bins that are being used for recyclable paper, but a) custodial crews are commingling with the trash in their rolling trash bins during their shift, and b) students and teachers do not consistently adhere to proper placement by material type. Custodial staff was generally very helpful, informative and interested. Some offered ideas on how to improve and/or why it wasn't working:
  - teachers are overworked; separating recyclables is just another task that they really do not have time for;
  - efforts are thwarted or overcome by neglectful students or non-participants;
  - lack of awareness;
  - champions leave;
  - kids and parents should become more involved;
  - more intensive awareness and education campaign needed to stimulate and maintain participation and proper separation.

Table 2-1
Sample Data and Recoverable Paper Calculations for Schools

Day Sampled	School/Facility	Type of Facility	Dumpster Sampled	Dumpster Size	Dumpster % full	Estimate of % of Recyclable Paper in Sample	Potential CY of Paper Recoverable	Potentially Recoverable Tonnage	Bulky Waste	Loose OCC %
Mon	Albemarle Road	MS	T2	8	25%	65%	1.30	0.10		
Mon	Independence	HS	T1	8	100%	N/A	0.00	0.00	Exercise Bike	
Mon	Independence	HS	T2	8	33%	60%	1.58	0.12		
Mon	Albemarle Road	ES	T1	6	50%	80%	2.40	0.18		1%
Mon	Elizabeth Lane	ES	T1	6	60%	75%	2.70	0.20		
Mon	Providence	HS	T1	8	100%	53%	4.24	0.32		
Tues	N. Alexander	ES	T1	8	33%	70%	1.85	0.14		
Tues	Morehead	ES	T2	8	60%	50%	2.40	0.18		40%
Tues	Morehead	ES	T3	8	85%	0%	0.00	0.00		40%
Tues	Vance	HS	T1	8	100%	0%	0.00	0.00		
Tues	Vance	HS	T2	8	40%	65%	2.08	0.16		50%
Tues	Park Rd. Montessori	ES	T1	8	20%	50%	0.80	0.06	Ceiling tiles, Foam packaging	5%
Wed	Myers Park	HS	T3	8	75%	10%	0.60	0.05		
Wed	Myers Park	HS	T4	8	25%	20%	0.40	0.03	Old chair, comp. monitor	
Wed	Selwyn	ES	T1	8	40%	35%	1.12	0.08		
Wed	Alexander Graham	MS	T1	8	60%	50%	2.40	0.18		
Wed	Alexander Graham	MS	T2	8	10%	0%	0.00	0.00	Loose & boxed fluorescent	

Day Sampled	School/Facility	Type of Facility	Dumpster Sampled	Dumpster Size	Dumpster % full	Estimate of % of Recyclable Paper in Sample	Potential CY of Paper Recoverable	Potentially Recoverable Tonnage	Bulky Waste	Loose OCC %
									tubes	
Thu	Bishop Spaugh	MS	T1	8	45%	50%	1.80	0.14		
Thu	W. Mecklenburg	HS	T1	8	45%	33%	1.19	0.09		
Thu	Marie Davis	MS	T2	8	20%	60%	0.96	0.07		
Thu	Quail Hollow	MS	T2	8	15%	30%	0.36	0.03		
Thu	Smithfield	ES	T1	8	15%	25%	0.30	0.02		
Thu	Ashley Park	ES	T1	8	40%	65%	2.08	0.16		10%
Fri	S. Mecklenburg	HS	T1	8	50%	45%	1.80	0.14		
Fri	Beverly Woods	ES	T1	8	45%	60%	2.16	0.16		
	Total Schools						**34.52**	**2.61**		

2.2.3 Observations Related to Recyclable Paper in Bagged Samples

- There was a considerable amount of recyclable paper in almost all school samples, a significant portion of which was printing and writing paper from classrooms and offices.
- It appears that elementary and middle schools tend to discard more recyclable paper than high schools, but that could be sampling bias. Of ten elementary school samples, seven had more than 50 percent recyclable paper. Similarly, of six middle school samples, four had more than 50 percent recyclable paper. However, of nine high school samples, only three had more than 50 percent recyclable paper.

2.2.4 Other Recycling/Reduction Observations

- There were insignificant quantities of OCC in any of the bagged samples.
- There was a fair amount of recoverable books in the trash. New children's reading books (hard-cover) were found at Selwyn ES. Another elementary school had dozens of soft-bound instructional books that could have been either reused or recycled.
- There was little evidence of container recycling in the schools. There were significant numbers of beverage containers (aluminum and PET primarily, roughly equal) at almost all of the sites. Selwyn ES was the only school observed that had containers outside of the cafeteria for container recycling.
- Visual observation of the trash, along with conversations with the janitors and with the school recycling auditor indicate that some classrooms may not have special receptacles for paper, and the ones that do may still find their recyclables mixed with trash. Intermediate storage or transport containers specifically designed for recycling are not used by the janitorial staff; they use one rolling barrel for trash and segregated recyclables may end up in this barrel. In some jurisdictions, factors such as fire regulations, concerns about hallway traffic, or aesthetics appear to hamper the use of recycling containers. A lack of containers, where it exists, has a negative impact on convenience. Participation suffers in any situation where people are required to make a special effort to recycle.

While it is generally accepted that elementary and middle school children are easily excited about recycling and love to participate, it is also true that they are mostly powerless to influence their environment and thus must follow the lead of adults – i.e. to find and use recycling receptacles. Because the field data indicates that elementary and middle schools do a worse job of recycling than high schools, it is reasonable to conclude that the adults are not providing leadership or motivation. Subsequent conversations with the school recycling auditor suggested that this assumption may be true for some of the schools, for varying reasons.

2.2.5 County Facilities' Audit Results

Table 3 summarizes the field data and projections for the non-school county facilities audited. Visual audit conclusions and observations related to the recycling programs in these facilities are presented in subsequent subsections.

2.2.5.1 Visual Audit Conclusions

- Based on the route sheet volumes and the November tonnage data supplied by Mecklenburg County staff, it is estimated that offices and other facilities generated an average of 44 tons of trash per week and recycled about five tons of paper and OCC.
- Visual waste audits were performed at only six County facilities, and only one dumpster at each facility was checked. This is less than ten percent of the County facilities provided on the trash and recycling lists, and an even smaller percent of the potential dumpsters. Based on such a small sample, and the fact that the samples were visual and no weights were taken, the conclusions below should be taken as only very rough estimates of the potential amount of recoverable paper. Actual amounts may vary widely from these estimates, based on many factors including facilities chosen, time of day of visual sampling, weeks chosen, etc.
- Since cafeteria waste was not present in substantial quantities in the offices and other facilities, the calculations that were made to estimate the potential recoverable paper in the waste stream were the same as for the schools, except that the percentages were applied to the entire waste stream determined to originate in offices and facilities.
- The average percentage of recoverable paper in the County facilities' trash is estimated to be about 23 percent by volume. Applying this volume percentage to the total cubic yards collected from these facilities, and then applying a density factor of 150 lbs per cubic yard for paper, suggests that system-wide an additional 36 tons of paper could be recycled from these locations per week. Some loose OCC was observed in two of the County facility waste dumpsters; but it was an insignificant amount, so no calculation of a potential increase in OCC recycling was made.
- Accounting for the fact that the dumpsters were only 57 percent full, based on a comparison of volume and weight figures supplied by the County, the actual potential recoverable paper is probably about 21 tons per week, approximately.
- For the County facilities, the projected potential increase in recycling of approximately 21 tons over the course of a week represents a 200 percent increase in the recycling tonnage, based on a weekly average of the actual recycling tonnage reported for four weeks from November 1 through November 27, 2004, provided by the County.
- Recycling one hundred percent of that potential additional 21 tons of paper per week from the offices and other facilities would represent a decrease in discarded waste of 50 percent compared to current waste tonnage. However, it may be more realistic to set a more modest percent recovery goal.

- The above projections assume that the sampled waste is representative of the waste generated at the sampled facilities, and the sampled facility waste streams are representative of the waste from all of the facilities, and the weekly tonnage of total waste generated in November is representative of the system wide waste stream generated year round. These assumptions vary from reality to an extent that is undetermined.

2.2.5.2 General Observations

- County buildings seem to do a pretty good job of recycling mixed paper, and OCC.
- None of the non-school sites had more than 50 percent recyclable paper left in the trash (Carlton Watkins had 50 percent).
- Recreation center dumpsters seem to attract waste from surrounding neighborhoods or people "hanging out" in parking lots.
- CPCC's trash dumpster indicates waste from various career-specific classes (e.g., nursing, cooking, etc.).
- CPCC does not appear to have a good grasp of how to use their recycling dumpster.

Table 2-2
Sample Data and Recoverable Paper Calculations for County Facilities

Day Sampled	School/Facility	Type of Facility	Dumpster Sampled	Dumpster Size	Dumpster % Full	Estimate of % of Recyclable Paper in Sample	Potential CY of Paper Recoverable	Potentially Recoverable Tonnage
Mon	Albemarle Rd. Rec. Ctr.	Parks/rec	T1	4	25%	0%	0.00	0
Tues	Samuel Billings Center	BLD/GD	T1	8	25%	25%	0.50	0.04
Tues	Hal Marshall Center	BLD/GD	T1	8	50%	10%	0.40	0.03
Tues	Carlton Watkins Center	BLD/GD	T1	8	20%	50%	0.80	0.06
Wed	CPCC	CPCC	T1	8	33%	25%	0.66	0.05
Wed	Meck Co. Parks & Rec	Parks/rec	T1	8	25%	25%	0.50	0.04
	Total Other Facilities							**0.22**

Table 2-3
Observation of Recycling Dumpster Contents for Schools and County Facilities

Day Sampled	School/Facility	Type of Facility	Dumpster Sampled	Dumpster Size Cu. Yd.	Dumpster % Full	Comments
Mon	Albemarle Rd. Rec. Ctr.	PK/REC	R1	4		empty
Mon	Albemarle Road	MS	R1	8		clean OCC & ONP
Mon	Independence	HS	R1	8	45%	mostly OCC, some ONP
Mon	Independence	HS	R2	8	30%	mostly OCC, some ONP
Mon	Albemarle Road	ES	R1	6		empty (we saw recycling truck leave on our way in)
Mon	Elizabeth Lane	ES	R1	6	0%	empty (marked paper)
Mon	Elizabeth Lane	ES	R2	6	75%	clean OCC (marked OCC)
Mon	Providence	ES	R1	8	40%	flattened OCC
Tues	N. Alexander	ES	R1	8	1%	1 OCC in recycling container
Tues	Morehead	ES	R1	8	35%	OCC
Tues	Morehead	ES	R2	8	15%	OCC (some w/shrink wrap)
Tues	Vance	HS	R1	8	1%	paper
Tues	Vance	HS	R2	8	5%	OCC
Tues	Park Rd. Montessori	ES	R1	4		1 OCC full of styrofoam peanuts
Tues	Samuel Billings Center	BLD/GD	R1	4	<10%	clean OCC
Tues	Carlton Watkins Center	BLD/GD	R1	4	<5%	3 unbroken OCC
Tues	Hal Marshall Center	BLD/GD	R1	8	40%	paper
Wed	CPCC West Campus	CPCC	R1	8	60%	Poked through the recycling

Day Sampled	School/Facility	Type of Facility	Dumpster Sampled	Dumpster Size Cu. Yd.	Dumpster % Full	Comments
						dumpsters, 50% full, very little recycling, some corrugated, 17 black bags containing mixed trash and approximately 35-40% very contaminated paper.
Wed	Myers Park	HS	R2	8	35%	located in parking lot by theater; lots of newspaper plus some unbroken OCC
Wed	Myers Park	HS	R1	8	90%	located near cafeteria; some unbroken OCC, some flattened OCC, film plastic
Wed	Selwyn	ES	R1	8	75%	contained clean OCC, some unbroken
Wed	Alexander Graham	MS	R1	6	60%	OCC (50% unbroken), some office paper
Thu	Bishop Spaugh	MS	R1	8	45%	OCC, mostly unbroken
Thu	W. Mecklenburg	HS	R1	8	80%	OCC
Thu	Marie Davis	MS	R1	8	25%	OCC
Thu	Marie Davis	MS	R2	8	5%	
Thu	Smithfield	ES	R1	8	5%	flattened OCC
Thu	Ashley Park	ES	R1	8	95%	OCC
Fri	S. Mecklenburg	HS	R1	8		OCC
Fri	S. Mecklenburg	HS	R2	8	70%	mixed recyclable paper and OCC
Fri	Beverly Woods	ES	R1	8	50%	mostly unbroken OCC, some paper

Section 3
RECOMMENDATIONS

Based on the results of this study, it appears that the County could increase paper recycling in the schools and other County facilities by a significant amount by implementing some changes to the program. Recommendations include the following:

- Continue educational efforts for teachers and students to keep involvement and interest in the paper recycling program at high levels.
- Provide specific training on recycling to janitorial staff. It seems that they are the primary material handlers for the recyclables and have indicated a willingness to help if given the proper tools. Also, special carts with space for both trash bags and recyclables are available for custodial staff. If individual or group training were provided, it could include training on how to use the carts to make recycling separation easier.
- Investigate the anecdotal evidence that classrooms may lack recycling bins and determine how widespread the situation actually is. If school administrators or teachers have concerns about bins, County staff may be able to work with them to address their concerns while still providing convenient recycling opportunities.
- Determine that recycling dumpsters are placed in the correct locations, close enough to the schools to make them convenient to use, but not by themselves so they become trash receptacles.
- Consider establishing a rewards program for schools that are consistently good recycling performers.

Section 4
CONSIDERATIONS FOR FOLLOW UP STUDY

- Using this sample of schools, or choosing a different sample based on other criteria important to County staff, dedicate one day to visit each sample school and interview custodial staff, teachers and students to determine the strengths and weaknesses of recycling participation, and to discover any possible institutional or school-specific barriers to increasing recycling.
- Determine the amount of recyclable aluminum cans and PET bottles in the schools and offices' waste streams by further analysis, and establish recycling programs for these materials. Both aluminum and PET are economically valuable components of the waste stream and facilities exist in Mecklenburg County that are capable of processing and marketing these materials.
- The most accurate way to project the potential recoverable tonnage of all recyclable material in the schools and offices waste streams would be to conduct weight-based composition sampling of waste derived from schools and offices. An analysis of landfill data on the weight and volume of waste would be used to create a sampling plan, to make sure that sampled waste was representative in both source and amount of the actual waste disposed. In this way, samples can be sorted and the various materials weighed in a manner that allows for statistical calculations and much more accurate projections of recovery based on materials in the waste stream.