SWANA RECYCLING
TECHNICAL ASSISTANCE STUDY

CUMBERLAND COUNTY
DROP-OFF PROGRAM

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1.0 INTRODUCTION

Two volunteer recycling drop-off programs and one unmanned drop-off program operate in the western half of Cumberland County at the present time. However, convenient and easy access to recycling by all residents in the rural western half of the County is limited, and the cost of operating the current drop-off programs continues to escalate. The County's goal is to continue to assist the existing programs and develop a network of drop-off facilities that will increase overall recycling, increase collection efficiencies and convenience, reduce labor requirements and extend recycling opportunities to a much larger geographical area of Cumberland County.

2.0 BACKGROUND

Currently, eighty-three percent of Cumberland County's 213,000 residents have access to weekly curbside recycling (see Table 1). As illustrated by the map at the end of this report, 18 of 33 municipalities in Cumberland County have mandated or volunteer curbside recycling programs in place. The 18 municipalities with curbside programs are all located in the eastern half of the County, with the exception of Shippensburg Borough (see map). The remaining 15 municipalities without curbside programs are all located west or south of Carlisle. Consequently, this large geographic area (approximately two-thirds of the County's square mileage) contains the remaining seventeen percent of the County's residents and represents a largely rural population. As shown by Table 1, a wide population range exists between municipalities without access to curbside recycling. Cooke Township has the smallest population with a total of only 117 residents. Oppositely, the updated 2000 census data reveals West Pennsboro Township to have 5,263 residents, and consequently would be subject to a mandated recycling program as required under Act 101 except for its low population density.

TABLE 1

2000 CUMBERLAND COUNTY CENSUS DATA

CURBSIDE AND NON-CURBSIDE COMMUNITIES

Municipality	Population
Camp Hill Borough	7,636
Carlisle Borough	17,970
Cooke Township	117
Dickinson Township	4,702
East Pennsboro Township	18254
Hampden Township	24135
Hopewell Township	2,096
Lemoyne Borough	3,995
Lower Allen Township	17437
Lower Frankford Township	1,823
Lower Mifflin Township	1,620
Mechanicsburg Borough	9042
Middlesex Township	6,669
Monroe Township	5,530
Mount Holly Springs Borough	1,925
Newburg Borough	372
New Cumberland Borough	7349
Newville Borough	1,367
North Middleton Township	10197
North Newton Township	2,169
Penn Township	2,807
Shippensburg Borough	4467
Shippensburg Township	4,504
Shiremanstown Borough	1,521
Silver Spring Township	10592
Southampton Township	4,787
South Middleton Township	12939
South Newton Township	1,290
Upper Allen Township	15338
Upper Frankford Township	1,807
Upper Mifflin Township	1,347
West Pennsboro Township	5,263
Wormleysburg Borough	2,607

Subtotals	2000 Population	% of County Population
Act 101 Mandated Curbside Communities	**155,356**	**72.71%**
Voluntary Curbside Communities	**22,247**	**10.41%**
Total Curbside Communities:	**177,603**	**83.12%**
Non-Curbside Communities:	**36,071**	**16.88%**
Cumberland County Total Year 2000 Population	**213,674**	**100.00%**

3.0 EXISTING DROP-OFF PROGRAMS

The three existing drop-off recycling programs that service the rural population of the 15 non-curbside municipalities are Big Spring Recycling in Newville, New Hope Recycling in Hopewell Township, and Dickinson Township Recycling located at the municipal township building in Dickinson Township.

Big Spring Recycling is located at the Newville fairgrounds and is managed entirely by volunteers. Every third Saturday of the month between 8:00 a.m. to 11:30.a.m., volunteers fill four 30-yard roll-off containers with commingled bottles and cans, newspaper, and cardboard brought to the site by County residents. Seasonally, a local farmer diverts some of the total newspaper volume by staging his truck at the site for collection. As shown in Table 2, Big Spring Recycling collected 136.65 tons of recyclable material in 2000. This value excludes newspaper volume taken by the local farmer. At the discretion of York Waste Disposal, the collected paper, cardboard, and commingled material are typically transported to Chambersburg Waste Paper, Recycle America in York, and Fairfax Recycling of Palmyra.

The New Hope Recycling Program, located at the Hopewell Township Building, operates on the first Saturday of the month from 8:00 a.m. to 11:30 a.m. New Hope Recycling owns two dome-top and two open-top containers that are used to collect commingled material, newspaper and cardboard. As with Big Spring recycling, these materials are usually taken to Chambersburg Waste Paper, Recycle America, and Fairfax Recycling. Like Big Spring Recycling, some of the newspaper is collected by a farmer and is not accounted for in the New Hope Recycling totals presented in Table 2. Even with some of the newspaper diverted, collections at this site typically fill two to three containers per month and a total of 126.48 tons of recyclable material was collected at the New Hope site in 2000.

Initiated in 1999, Dickinson Township Recycling operates a drop-off site using roll-off containers supplied by Waste Management. Waste Management places roll-off recycling containers at the municipal building the last Saturday of the month. This drop-off site remains unmanned for the weekend and is reserved for use by Dickinson Township residents only. Newspaper, commingles, cardboard and office paper are collected by this program and in 2000 (its first full year of operation) this drop-off site collected nearly 35 tons of recyclable material (Table 2).

TABLE 2: NEW HOPE/ BIG SPRING RECYCLING VOLUME-2000

NEW HOPE RECYCLING - 2000	
MATERIAL	**Weight**
Newspaper	34.47
Commingled	79.09
Cardboard	12.92
TOTAL RECYCLI NG	**126.48**
BIG SPRING RECYCLING - 2000	
Newspaper	36.20
Commingled	84.05
Cardboard	16.40
TOTAL RECYCLI NG	**136.65**
DICKINSON TOWNSHIP RECYCLING - 2000	
Newspaper	6.47
Commingled	16.48
Cardboard	2.69
Office Paper	9.35
TOTAL COMBINED RECYCLING	**298.12**

3.1 Costs to Cumberland County for Existing Drop-Off Sites

Cumberland County currently spends approximately $15,000 per year assisting the Big Spring and New Hope recycling programs. For the past two years, the Solid Waste Authority of Cumberland County (SWACC) has covered all transportation and processing costs for the recyclable material generated by these two volunteer programs. Additionally, the County pays $200 per month in rental fees for the four roll-off containers staged at Big Spring Recycling. Unfortunately, none of the material taken from either site to Chambersburg Waste Paper or Recycle America generates any revenue. This is illustrated by the commingled market information presented in Table 3. Additional market information provided by SWACC is located in Appendix A.

TABLE 3: COMMINGLED MARKETS WITHIN 2 HOURS OF CUMBERLAND COUNTY

Facility	Address / Phone	Hours	Materials Accepted/Value	Additional Information
Cougle Recycling, Inc.	1000 South Fourth St. Hamburg, PA 19526	M-F 8 a.m. – 5 p.m.	Newspaper- *Contract Cardboard- *Contract Mixed paper –* Contract All Commingled - $0	Transfer station – pricing locked by contract and not dependent on volume – *Refer to contract provided in Appendix B
Washington Township MRF	13013 Welty Road Waynesboro, PA 17268 (717) 762-3128	M-F 8 a.m. – 4 p.m.	Newspaper- $0 Cardboard-$0 Mixed Paper-$0 Plastics #1 & #2- $0 Mixed Glass- $0 Aluminum cans- $0 Tin cans- $0	$0 revenue for all material regardless of separation. $70 charge per ton for contaminated material
Recycle America	4400 Mount Pisgah Road York, PA 17402 (717) 246-0262	M-F 6 a.m.- 4:30 p.m.	Plastics #1- $0 Plastics #2- $0 Aluminum Cans-$0 Tin (Steel) Cans-$0 Glass-$0 Cardboard-$0 Newspaper-$0	Materials Recycling Facility

*Cougle Recycling operates solely by the contract that is presented with market information in Appendix A

4.0 POTENTIAL REVENUE FROM SOURCE SEPARATED MARKETS

Because Cumberland County has very limited opportunity to generate revenue from commingled recycling markets, it was beneficial to locate source separated markets that may generate revenue to help offset costs incurred from implementing a drop-off program. Source separated markets are shown in Table 4.

TABLE 4: SOURCE SEPARATED MARKETS WITHIN TWO HOURS OF CUMBERLAND COUNTY

Facility	Address / Phone	Hours	Materials Accepted/Value	Additional Information
Consolidated Scrap Resources, Inc. (CSR)	1616 N. Cameron St. Harrisburg, PA 17110 (717) 233-7927	M-F 7a.m. – 4:30 p.m.	Aluminum cans - 40¢/lb. Tin cans - 1¢/lb.	Formerly know as B. Abrams & Sons
Brandywine Recycling	328 North 14th Street Lebanon, PA 17042	M-F 7a.m. – 4:30 p.m.	ONP- $10/ton Plastic #1 PET - 3¢/lb. Plastic #2 HDPE- 2¢/lb. Plastic #2 Clear - 8¢/lb. Cardboard - $5/ton Aluminum cans - 42¢/lb. Tin cans - 0¢/lb. **Glass** Brown- $0-$5/ton Clear- $10-$20/ton Green-$0	Phone books accepted with newspaper. Must separate glass. Increased value for separated milk & water containers.
St. Jude Polymer Corp.	1 Industrial Park Frackville, PA 17931	M-F 7 a.m. – 5 p.m.	Plastic #1 PET - 12¢/lb. Plastic #2 HDPE -11¢/lb.	Will accept commingled material at lower price.
Graham Packaging	2401 Pleasant Valley Road York, PA 17402 (717) 849-8500	M-F 7 a.m. - 5 p.m.	Baled Plastics #2 HDPE – Clear- .13¢/lb Colored .10¢/lb Mixed HDPE - .11¢/lb Plastics #1 PET-.04¢/lb (limited to four bales per load)	Only accept **baled** HDPE and Baled PET. PET is limited to four bales only HDPE
Chambersburg Waste Paper	2047 Loop Road PO Box 720 Chambersburg, PA 17201	M-F 8 a.m. – 4:30 p.m. First Saturday of the month 8 a.m. – 12 noon	Newspaper - $0 Cardboard - $0 Mixed - $0 Aluminum cans - 38¢/lb. Tin cans - $0	No plastic or glass accepted.
Harrisburg Waste Paper	4200 Industrial Road Harrisburg, PA 17103 (717) 236-7971	M-F 7:30 a.m. – 4 p.m.	Newspaper - $10/ton charge Cardboard - $10/ton charge Mixed paper - $0	Currently charge for loose newspaper and cardboard. PET and HDPE must be baled.

As calculated in Table 5, the estimated recyclable waste generated by Cumberland County's non-curbside population is 1,645 tons per year. Note that this calculation assumes that HDPE will make up five percent (by weight) and PET will make up four percent (by weight) of the estimated 1,645 tons of recyclable waste. The percentages of material composition by weight for recyclable materials commonly collected at drop-off sites are provided in the chart located in Appendix B.

TABLE 5: ESTIMATED RECYCLABLE TONNAGE FROM NON-CURBSIDE RESIDENTS

Municipality	Population	Estimated Recyclable Material (non-curbside residents)* tons/year
Cooke Township	117	5.34
Dickinson Township	4,702	214.53
Hopewell Township	2,096	95.63
Lower Frankford Township	1,823	83.17
Lower Mifflin Township	1,620	73.91
Newburg Borough	372	16.97
Newville Borough	1,367	62.37
North Newton Township	2,169	98.96
Penn Township	2,807	128.07
Shippensburg Township	4,504	205.50
Southhampton Township	4,787	218.41
South Newton Township	1,290	58.86
Upper Frankford Township	1,807	82.44
Upper Mifflin Township	1,347	61.46
West Pennsboro Township	5,263	240.12
Total Estimated Recyclable Material		**1645.74 tons/yr***

* Estimated recyclable material volume that could be collected in a new County drop-off program based on 25% participation by the Non-Curbside communities at drop-off locations and 1 lb/ person/ day generation of recyclable materials.

Using the estimated tonnage calculated in Table 5 (1,645 tons per year), and current market prices for plastic from St. Jude polymer, Gannett Fleming estimated the potential annual revenue for plastics (if taken to St. Jude Polymer) to be around $35,000 per year (Table 6). This calculation simply provides the County with estimated revenue for one market (St. Jude Polymer) and one material (plastics). Additional revenue calculations will be useful after the County decides on a particular drop-off program and determines specific markets that will be used by the chosen drop-off system.

TABLE 6: ESTIMATED PLASTIC REVENUE PER YEAR (St. Jude Polymer)

Market	Materials	Price Received (April 2001)	Estimated Plastic Weight Generated (tons/year)	Estimated Revenue/ year
St. Jude Polymer	Plastics PET	.12¢/lb	82.25	$19,740
	Plastics (HDPE)	.11¢/lb	65.80	$14,476
Totals			**148.05 tons**	**$34,216**

5.0 DROP-OFF SITE ANALYSIS

On January 25, 2001, representatives from Gannett Fleming, VQUIP (a drop-off equipment vendor), and the Recycling Coordinator for Cumberland County conducted a windshield analysis to identify potential drop-off sites. From this windshield analysis and consideration of site requirements, seven new potential drop-off sites were identified in Cumberland County and are shown on the attached map.

5.1 Site Requirements

The following site criteria were used to determine potential drop-off sites:

- ✓ Geographic distribution – A centralized location, preferably within a 5-10 mile travel distance of residents
- ✓ Site should require minimal construction ($5,000 allowance)
- ✓ Level surface – Preferably paved
- ✓ High visibility, well lit, and easily monitored
- ✓ Location should already be frequented by people making regularly planned (i.e. grocery) shopping trips. Examples: Shopping plaza, Wal-Mart, K-Mart
- ✓ The site must provide enough space for parking and for servicing without disrupting the site's primary business activity

Once a site is chosen and equipment installation begins, highly visible recycling signage should be provided to ensure the site is easily recognized as a recyclable drop-location.

5.2 Site Criteria Checklist

As indicated on the map, seven sites were proposed as new potential drop-off locations, and two sites are existing drop-off locations. Although each proposed site generally meets the established criteria, some specific considerations and evaluations were made in determining each site location. The checklist shown in Table 7 shows criteria used as a guideline for determining the proposed drop-off locations in the County. A positive, negative, and neutral rating system was used to evaluate the characteristics (criteria) of each site. Site 7 was under construction during the visit conducted by the Cumberland County Recycling Coordinator on April 23, 2001.

TABLE 7: SITE CRITERIA CHECKLIST FOR DROP-OFF SITES IN CUMBERLAND COUNTY

Potential Sites	Geographic location	Level Area	Existing Pavement	Good Lighting	Adequate Space for Parking/ Servicing	Location Visited Frequently	Location Easily Monitored
1	+	+	+	+	+	+	+
2	O	O	+	+	O	–	O
3	+	+	+	+	O	+	+
4	+	+	+	+	O	+	O
5	+	+	+	+	+	+	+
6	+	+	+	+	+	+	+
7	O	+	O	+	O	–	+
A	O	O	–	–	O	–	–
B	O	+	–	–	+	–	–

+ Positive
O **Neutral**
- Negative

Brief descriptions of the strengths and/or weaknesses for each proposed site are presented below. For some locations, factors beyond the physical layout of the site were considered. These considerations are included with the site descriptions.

Site 1: K-Mart Plaza, Shippensburg

Site meets many of the requirements. A significant number of persons already visit the Plaza daily (both K-Mart and Weis Markets on site). Another key point is that the police station is across the street and could help with monitoring of the site.

Site 2: Penn Township Fire Station, Penn Township

Geographic location: this site is located nearly halfway between sites 1 and 7, provides convenient access to a drop-off site for Penn Township and other nearby County residents. Flat, paved site.

Sites 3 & 4: Saylor's IGA, Big Spring High School

These two sites could potentially serve as relocation options for the existing Big Spring site. These sites meet more of the established criteria and they are in close proximity to Big Spring Recycling (established drop-off customers). Both sites may have limited space available.

Site 5: Carlisle Wal-Mart (Proposed)

Site 5 was chosen to be located at the Wal-Mart (soon to be under construction) near the MJ mall in Carlisle off Exit 14. As indicated by VQUIP, Wal-Mart locations are excellent locations for drop-off recycling systems primarily because of the large numbers of people frequenting the location regularly, especially at "Super" Wal-Marts (those with grocery stores). Wal-Mart locations typically meet all site criteria defined for determining a successful drop-off location.

Site 6: Wal-Mart, Mechanicsburg

As with the Carlisle Wal-Mart site, this site was proposed because it has a very large number of daily visitors. Gannett Fleming believes the Mechanicsburg site (and Carlisle site) will be used regularly by residents in the rural half of the County who commonly make trips to these locations to meet their shopping needs. It is also expected that participation will come from some of the residents having curbside collection. Giant grocery store is located nearby, and is relocating to a new site across Route 114. New Giant site is a possible alternate for Site 6.

Site 7: Dickinson Township Building, Dickinson Township

Similar to the Penn Township Fire Station (Site 2), this site was proposed because it geographically makes sense, and would improve recycling convenience for residents in Dickinson Township and extend opportunities to neighboring municipalities. Dickinson Township residents already recognize this site as a drop-off location because of the successful drop-off program in place since 1999.

Site A: New Hope Recycling, Hopewell Township Building, Hopewell Township

The strength of New Hope Recycling site is that it has been operated by volunteers for approximately 10 years and is well received and recognized by the local community. As seen in Table 7, however, the site has a neutral or negative rating for all of the site criteria specifications. As discussed with the County, it may be worthwhile to research the Cumberland County Landfill as a potential site for relocating the New Hope Recycling program.

Site B: Big Spring Recycling, Newville Fairgrounds, Newville

Although local residents are familiar with the Big Spring Recycling program, the site has a negative rating for most of the specified site criteria (Table 7). Although Newville Fairgrounds is a level area with adequate space, sites 3 & 4 (each located only several miles away) meet much of the specified criteria and are good relocation options for this program.

6.0 DROP-OFF EQUIPMENT ALTERNATIVES ANALYSIS

6.1 Equipment Considerations

As identified by Gannett Fleming and the County, drop-off recycling equipment that will best serve Cumberland County's needs should meet the following specifications:

- ✓ Containers must appear different than garbage (color, labeling, etc.)
- ✓ Containers must have customized openings that minimize garbage drop-off and contamination (critical requirement at unmanned sites)
- ✓ Container capacity must accommodate different volumes for each material
- ✓ System must look and be kept neat and clean to encourage widespread use by the County

An example of a successful drop-off program that follows the above criteria exists in Cambria County. Cambria County currently has nine unstaffed drop-off sites that collect glass,

aluminum, tin, newspaper and plastics #1 (PET) and #2 (HDPE). The use of Haul-All containers with customized openings, supplied by VQUIP, has successfully reduced contamination to less than two percent by volume. The photographs presented in Appendix C illustrate several successful layouts for drop-off containers similar to those recommended by Gannett Fleming and in use by Cambria County.

6.2 Specific Equipment Needs Outlined by Cumberland County

As with Cambria County, Gannett Fleming recognized Cumberland County's need to consider drop-off equipment that could limit garbage contamination at unstaffed drop-off sites with customized openings suited to cardboard, mixed, paper and commingled materials. For this reason, Gannett Fleming did not evaluate any open top roll-off containers or open top dome containers in this study. Furthermore, accommodating different volumes of each material as anticipated by the County was also a critical factor in determining equipment needs. With both considerations in mind, Gannet Fleming compared equipment and capitol costs for VQUIP, SAC Recycling, and Bucks Fabrication as options for providing drop-off equipment that could be customized to meet the County's requirements.

6.2.1 Individual Recycling Bins with Customized Openings

The first drop-off system reviewed is provided by VQUIP. The VQUIP system uses individual collection containers with six cubic yards of capacity per container. The site's capacity for recyclable materials is easily adjusted by adding containers as necessary to support a commingled system or source separated system. Five single stream bins and one split stream bin is suggested for each site if a commingled recycling program is in place. Five single stream bins and two split stream bins will work well for a source-separated program using the VQUIP system. Gannett Fleming believes additional single stream bins should be located at sites where higher participation is probable. The Wal-Mart complex in Mechanicsburg is a good example of a site where increased participation and associated recyclable volume increases may require additional collection capacity.

Because each container is serviced separately, the VQUIP system has the ability to collect like materials at each drop-off location (with a specialized Rp-235 collection truck) and then transport the consolidated materials to a market when the collection vehicle is near or at full capacity (35 cubic yards). Having the flexibility to consolidate one material (e.g. plastics) is a critical factor for implementing a drop-off system that can minimize operational costs. The VQUIP system also offers an AugPac vehicle that breaks the integrity of the materials as they are auger-forced into the 22-cubic-yard compartment of the vehicle. This feature is especially useful

for plastics, and can increase the vehicle's capacity to carry plastic #1(PET) & #2(HDPE) by six to seven times. If the VQUIP system is used, it is recommended that one AugPac and one Rp-235 be purchased to maximize efficiency. The AugPac costs $146,220 and the Rp-235 collection vehicle costs $119,920. The total cost for this system using a commingled sort and two collection vehicles is $522,702. The total cost for a VQUIP system with two collection vehicles for a source separated recycling program is $574,678. All related information for the VQUIP system, including capital costs for six drop-off sites designed for commingled and source separated markets is shown in Appendix D.

6.2.2 Customized Roll-Off Containers

Customized roll-off equipment was another option analyzed for the six proposed drop-off locations. This system, as proposed by Bucks Fabricating, requires staging two 24-yard containers at each location. The openings would be customized to accept cardboard, mixed paper, and all commingled material sizes and would be placed on both sides of the roll-off containers. The compartments would also be designed to limit rain from entering the container (see Appendix E for all equipment information for Bucks Fabricating). The roll-off containers would be painted blue by the manufacturer to separate them from garbage containers. In addition to customized color and openings, the number of compartments and the capacity of each compartment can be designed to meet the needs of the County.

Although customized openings and custom painting can be done by Bucks Fabricating prior to shipping, it may be cost effective for Cumberland County to research pricing for on-site customization of the openings and on-site painting for each roll-off container.

Gannett Fleming suggests that two additional roll-offs be purchased if this system is used (a total of 14 roll-off containers). The two additional roll-offs would allow the driver to drop an empty container at a site to replace a filled roll-off that is being transported to an available market and emptied. A freightliner truck with a 20,000 lb hook lift ($55,000) would be needed to service the roll-off containers. The total cost for the customized roll-off system is $116,130 for a source separated program and $105,490 for a commingled program requiring 14 roll-off containers and a Freight Liner Truck, as proposed by Bucks Fabricating (Appendix E).

6.2.3 Customized Recycling Trailers

Customized single-axle recycling trailers are another equipment option for the six sites proposed for Cumberland County. These trailers, as proposed SAC Recycling Trucks, are constructed with aluminum and can be customized to meet source separated and commingled needs. Each

trailer has an arched center that creates a "gravity feed" and thus forces the recyclable materials out a sliding door. Because they are constructed of aluminum, the SAC recycling trailers are relatively light and can be serviced by any standard V-8 or V-10 truck with a hitch. SAC Recycling quoted a Ford F350 (V-10) at a cost of $23,183 (Appendix F).

It is not recommended the aluminum body of SAC's recycling trailers be painted; we believe the polished aluminum trailers give them a clear distinction from typical garbage containers. Recycling labels for identifying materials are available through SAC Recycling.

As with the roll-off containers, 2 trailers would be staged at each site and two additional recycling trailers would be used as empties (14 total trailers). Customized openings for cardboard, mixed paper, and commingled materials would be located on both sides of the trailer. In this case, the openings would be added to either side of the arched roof of the container. Although SAC is able to design trailers for a commingled sort, they only quoted a price for source-separated trailers with 10 compartments. Each unit is $17,500 and the total cost for a system using SAC recycling trailers is $275,483. The quotation information and equipment information for SAC recycling is provided in Appendix F.

Because each roll-off container and recycling trailer requires specific compartment sizes to meet differing volumes expected for each type of recyclable material, it was necessary to determine the capacity for each compartment. This information is provided in Appendix G, and was reviewed with the Recycling Coordinator from Cumberland County.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Calculations estimating recyclable waste from Cumberland County's non-curbside population and experience at the two existing drop-off sites (operating at limited hours) suggests that a program with six sites open 24 hours per day would generate approximately 1,600 tons of recyclable material per year. There appears to be a reasonable potential demand for these services within the County. At this level, the implementation of a drop-off system may not generate sufficient revenue to offset costs; however, the Solid Waste Authority of Cumberland County (SWACC) has shown a commitment to use available funding to improve the County's recycling programs.

Determining operational costs and the life cycle costs of a drop-off program were beyond the scope of this study. As a result, SWACC may wish to conduct further study to confirm full costs and feasibility of a drop-off program. Although specific costs and life cycle were not defined by this study, it is apparent that a drop-off program implemented within Cumberland County could

be designed for source separation to maintain consistency with residents already familiar with source separation methods, to allow flexibility for source separated and/or commingled materials markets, and to take advantage of higher revenues received from source separated recyclables.

If the results of additional analyses for operational and life cycle costs justify a drop-off system for Cumberland County, Gannett Fleming proposes the following recommendations for the implementation of a successful drop-off program within Cumberland County.

7.1 Site Recommendations and Grant Funding

- Six drop-off sites could be established initially, selected from the nine sites shown on the map.
- It is recommended that each drop-off site be designed for source separation to take advantage of higher market prices as illustrated in this study. Importantly, this does not limit Cumberland County to source separated markets, and based on economic feasibility for the County, it may be sensible to use available commingled markets.
- An application for 902 grant funding could be completed for reimbursement of up to 90 percent of all capital costs for equipment.
- The lease value of the land provided at no cost from merchants, townships, and boroughs could be used as a local match to cover part or all of the remaining 10 percent of capital costs (not covered by 902 grant funding) to the County.
- An application for 901 grant funding could be completed for a feasibility study of a materials recycling facility or a consolidation facility to improve the market revenues for recyclables, and to determine if Cumberland County can benefit from an economy of scale by servicing mandated and non-mandated communities with contracted haulers for recycling. The 901 planning study can better assess the life cycle and annual budgetary costs of the program, and will also help determine collection economics for source separated and commingled markets available to the County.

7.2 Equipment Recommendation

Through the course of this study it was determined that the VQUIP system is the drop-off alternative with the most advantages for Cumberland County when considering the County's specific needs and conditions at the present time. With Section 902 recycling funds available to reimburse the majority of capital costs, the primary focus becomes implementation of a system that will minimize operational costs to the County, and looking to the future, potentially progress to a monetarily self-sustaining operation.

As such, the VQUIP system will minimize operational costs and benefit Cumberland County because it is the only system identified that is able to consolidate recyclables on site, and therefore has flexibility that enables the use of source separated and/or commingled recyclable markets. This flexibility will allow the County to utilize cost beneficial markets and reduce costs associated with unnecessary transportation of multiple materials in one truck. Compartmentalized trailers and roll-off containers are not capable of consolidating specific materials to the extent of the VQUIP system. Consequently, compartmentalized trailers and roll-offs are somewhat limited to the use of commingled markets where little or no revenue can be expected for recyclable materials.

7.3 Equipment and Labor Requirements

- As proposed, two collection vehicles could be purchased for six of the nine potential sites.
- Seven to eight collection bins (as outlined for source separation) are suggested per site initially, but the number of bins will vary based on collection volumes and servicing frequency.
- One full-time driver could be hired (or contracted) for vehicle operation. The full-time employee will service the six sites throughout the week. The driver can schedule alternate use of collection vehicles to collect plastics with the AugPac on scheduled days, and use the Rp-235 for other materials. As needed, a back up driver may be provided by Cumberland County or possibly be made available from neighboring counties.