



## MEMORANDUM

April 15, 1997

TO: County Council

FROM: Karen Orlansky<sup>KO</sup>, Director  
Office of Legislative Oversight

SUBJECT: OLO Memorandum Report: Review of the Solid Waste Rate Calculations

The attached memorandum report was prepared by Arthur Andersen LLP, on contract to the Office of Legislative Oversight. The report responds to the Council's request for an independent review of the Solid Waste Management System Rate Calculation Worksheets, that were prepared by the County's Department of Public Works and Transportation, Division of Solid Waste Services.

Arthur Andersen circulated a final draft of their report to Executive Branch staff for review. The final report incorporates Executive Branch staff comments.

On April 21, Arthur Andersen is scheduled to brief the Transportation and Environment Committee on their findings and recommendations. Executive Branch staff from the Department of Public Works and Transportation will be available on April 21 to discuss the report with the T&E Committee.

### Background

During FY 97 operating budget discussions, Councilmembers identified the need for a more in-depth understanding of the calculations used to justify current and projected solid waste charges. Executive staff agreed to prepare and document the master spreadsheets used to calculate the solid waste charges. The purpose of the documentation was to detail the sources of data, assumptions, and calculations used to derive each of the cells in the spreadsheets.

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Office of Legislative Oversight

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OLO's FY 97 Work Program, as approved by the Council in July 1996, included a project to provide an independent review of the Solid Waste Management System Rate Calculation Worksheets (the worksheets) being prepared by the Division of Solid Waste Services. Specifically, the Council requested that the Council's auditors, Arthur Andersen LLP, be retained to conduct the independent review. Arthur Andersen's work started in mid-January 1997 and was completed in April 1997.

## **Objectives of Review**

Arthur Andersen's task was to examine the worksheet documentation and independently assess whether the source data and assumptions are fair and reasonable, and to ensure the integrity of the calculations. The specific objectives of the project were to:

- Review the reasonableness of the rate calculation methodology;
- Verify that the amounts used in the rate calculation worksheets are consistent with budget documents and other financial information; and
- Develop recommendations on how the County can improve the rate calculation process and enhance communication of the rates both internally and externally.

## **Summary of Findings and Recommendations**

Arthur Andersen concludes that the County's current rate methodology is a rational basis for calculating the rates and fees charged to its customers. Specifically, Arthur Andersen reports that, "The calculations appear to be consistently applied and based on historical data collected by the Division of Solid Waste Services (DSWS). Where applicable, DSWS has had waste generation studies performed and consulted with experts in developing their assumptions."

Arthur Andersen also identifies some key areas for improvement. In particular, Arthur Andersen recommends that the County Government:

- Develop plans for updating assumptions used in the methodology;
- Enhance communications to the public related to fees charged;
- Review the allocation of the County Government's share of the base systems benefit charge; and
- Develop a management information reporting package.

## **Acknowledgments**

OLO appreciates the cooperation of Executive Branch staff throughout this study. In particular, OLO thanks Robert Merryman, Deputy Director of the Department of Public Works and Transportation; Alison Clark from the Division of Solid Waste Services; Richard Duthoy from the Department of Finance; and Laura Trotter from the Office of Management and Budget, for making information available to Arthur Andersen; and for taking time to explain the documentation and review the draft report.

## **Attachment**

c: Jennifer Hughes, Senior Legislative Analyst  
Timothy Firestine, Director, Department of Finance  
Graham Norton, Director, Department of Public Works and Transportation  
Robert Merryman, Deputy Director, Department of Public Works and Transportation  
Robert Kendal, Director, Office of Management and Budget  
Deborah Snead, Assistant Chief Administrative Officer  
Shirley Edwards, Partner, Arthur Andersen, LLP

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Arthur  
Andersen

**Review of the Solid  
Waste Fund Rate  
Calculations**

April 1997

# ARTHUR ANDERSEN

ARTHUR ANDERSEN & CO. SC

April 15, 1997

Ms. Karen Orlansky  
Director  
Office of Legislative Oversight  
Montgomery County Council  
100 Maryland Avenue  
Rockville, Maryland 20850

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Arthur Andersen LLP

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Washington DC 20006-2873  
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Dear Ms. Orlansky:

In accordance with Amendment No. 2 to the Council's contract with Arthur Andersen, the attached report relates to our review of the County's Solid Waste Management System Rate Calculation Worksheets prepared by the Division of Solid Waste Services. Set-forth in our report is the background to the project, a summary of the rate calculation, the overall results and several recommendations which we developed as a result of our work.

In summary, based on the procedures performed, the County's current rate methodology is a rational basis for calculating the rates and fees charged to its customers. The calculations appear to be consistently applied and based on historical data collected by the Division of Solid Waste Services ("DSWS"). Where applicable, DSWS has had waste generation studies performed and consulted with experts in developing their assumptions. However we did identify some key areas the County Government should focus on. In summary our recommendations are to:

- develop plans for updating assumptions used in the methodology,
- enhance communication to the public and County Council related to fees charged,
- review the allocation of the County Government's share of the base systems benefit charge,
- develop a management information reporting package.

Our work started in mid-January 1997 and was completed in April 1997. During the course of our work we held meetings with and discussed the rate calculation process with Councilmembers, key personnel in the Division of Solid Waste Services, the Department of Finance and the Office of Management and Budget. Each staff member was highly cooperative and helpful to us in obtaining the information we needed to complete this project. We would like to specifically thank Allison Clark- DSWS, Richard Duthoy- Department of Finance and Laura Trotter- Office of Management and Budget, for their assistance in explaining the calculation methodology, and obtaining various documents and other information we needed to obtain our understanding of the rate calculation methodology.

We appreciated this opportunity to once again be of service to Montgomery County. We look forward to discussing the results of our work with the Council.

Very truly yours,

*Arthur Andersen LLP*

**MONTGOMERY COUNTY GOVERNMENT**

**REVIEW OF THE SOLID WASTE FUND  
RATE CALCULATIONS**

**MONTGOMERY COUNTY GOVERNMENT  
REVIEW OF THE SOLID WASTE FUND RATE CALCULATIONS**

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## BACKGROUND

### Objectives

During the FY 1997 budget cycle, the Montgomery County Council (the "Council") raised significant questions related to the calculations performed by the Division of Solid Waste Services ("DSWS") related to how the Solid Waste Management System Rate Calculation worksheets (the "worksheets") were prepared. Specifically, the Councilmembers identified a need for a more in-depth understanding of the calculations used to justify the current and projected solid waste charges.

As a result of the Councilmember's concerns, the Office of Legislative Oversight ("OLO") contracted with Arthur Andersen to provide an independent review of the worksheets. Specifically, the Council requested that we examine the worksheet documentation and independently assess whether the source data and assumptions are fair and reasonable, and ensure the integrity of the calculations.

In a letter to OLO, dated October 16, 1996, we set-forth the objectives of our review and the specific approach to meet each of those objectives. The following is a summary of those objectives.

- Review the reasonableness of the rate calculation methodology.
  - Does the actual rate calculation achieve the intent of the methodology?
  - Are the costs being recovered through the rates charged to property owners reasonable?
- Verify that the amounts used in the rate calculation worksheets are consistent with budget documents and other financial information.
- Develop recommendations on how the County can improve the rate calculation process and enhance communication of the rates, both internally and externally.

Prior to the start of our work in early 1997, we held several meetings with staffmembers of both DSWS and the Department of Finance to understand how they perform the rate calculations and to provide some ideas on how the process could be improved to increase the Council's understanding of the calculations. We noted that the rate calculations for FY 1997 included several improvements from prior worksheets, and that the staff of DSWS, the Office of Management and Budget and the Department of Finance have spent a significant effort to improve the process and related documentation.



### **Scope of Procedures Performed**

Our work started in mid-January 1997 and was completed in April 1997. During the course of our work we held meetings with and discussed the rate calculation process with Councilmembers, key personnel in the Division of Solid Waste Services, the Department of Finance and the Office of Management and Budget. A large portion of our time was spent working closely with Allison Clark - DSWS, Richard Duthoy - Department of Finance and Laura Trotter - Office of Management and Budget. The primary procedures we performed are summarized as follows.

- Developed an understanding of the rate calculation methodology through discussion with DSWS staff and through analysis of relevant County Government materials. The listing of documents reviewed is included at Exhibit E.
- Developed an understanding of the underlying assumptions used to set the rates and how such assumptions are developed.
- Interviewed County personnel involved in calculating the adopted rates to understand the rate calculation worksheets and how the supporting information is accumulated.
- Interviewed County Council members to gain perspective on the theory behind the rate calculation and their concerns over current procedures.
- Reviewed industry information relevant to solid waste disposal and recycling.

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### **Definitions of Certain Abbreviations Used Within Report**

BSBC = Base Systems Benefit Charge  
ISBC = Incremental Systems Benefit Charge  
SF = Single Family  
MF = Multi-family  
NR = Nonresidential  
DSWS = Division of Solid Waste

## RATE CALCULATION SUMMARY

The following is a summary of the charges related to the County's solid waste disposal and collection system. These summaries combine the elements of the charges and fees, with the populations to which the overall charges and fees are distributed. On the following pages are descriptions of the specific calculations and assumptions used by the County government to determine each charge. All calculations are based on the Council Approved Fiscal Year 1997 Budget.

- **Base Systems Benefit Charge (BSBC)**- The BSBC is charged to all property owners within the County (including single family (SF), multi-family (MF) and nonresidential (NR) property owners). This charge represents a significant portion of the costs of operating the disposal system within the County. The BSBC is computed by determining the total operating costs of the disposal system, offset by costs which are recovered within the system for specific services such as recycling, disposal (tipping fees), and leaf vacuuming. The total system costs are further offset by revenue items such as recovered materials, energy credits, investment income, and contributions of the Solid Waste Fund's retained earnings, when approved by County Council. See **Exhibit G** for a reconciliation of the BSBC.
- **Incremental Systems Benefit Charge (ISBC)**- The ISBC is a direct charge which is assessed only to those property owners that receive recycling services. All single family households within the County receive curbside recycling services, and are charged their share of such costs. The multi-family and nonresidential property owners are regulated by applicable laws to recycle, but must contract individually for such recycling services. The ISBC charged to multi-family and nonresidential owners is a nominal amount, which covers educational, enforcement and outreach services to those sectors. These educational, enforcement and outreach services include services such as educational pamphlets, site reviews by the Division of Solid Waste to ensure compliance, and seminars on the benefits of recycling presented by employees within the Division of Solid Waste.
- **Disposal Fee**- This fee is collected at the Shady Grove transfer station for the actual "tipping" of waste from the multi-family and nonresidential sectors, and through charges to single-family property owners based on an assumed rate of disposal. The current tipping fee is \$44 per ton, and is a rate determined by the Division of Solid Waste to be equivalent to the market rate for such tipping services.
- **Collection Fee**- This fee is charged to single-family property owners within the "collection district". These homeowners within the district (down-county) pay the County to collect their trash either once or twice per week. The County is in the process of reducing trash collection to once a week. The costs related to collection are primarily for collection contracts and charged only to those property owners receiving these collection services.

## RATE CALCULATION SUMMARY

- **Leaf Vacuuming Fee-** This fee is charged to those property owners within the leaf recycling service area (the "leaf vacuuming district") which encompasses 14 of the 16 tax classes as defined by the County, in addition to certain multi-family property owners that receive these leaf vacuuming services. The tax classes are geographic areas within the County as identified in the Department of Finance's informational document entitled "*Property Taxes - What You Need to Know About Them...*". The leaf vacuuming district is comprised of both single-family and multi-family property owners. The costs related to leaf vacuuming are for collection and transportation costs, and charged only to those property owners receiving these leaf vacuuming services.

## BASE SYSTEMS BENEFIT CHARGE - SINGLE FAMILY HOUSEHOLDS

The single family ("SF") BSBC rate is calculated using the data in the following table.

<u>Categories</u>	<u>Data</u>	<u>Source of Data</u>
Total BSBC	\$38,238,000	Council's Approved FY 1997 Budget -- See Exhibit G
Total Waste Generated, County (tons)	938,890	1992 Policy Paper (Data compiled by DSWS) -- See Exhibit H
Total Waste Generated, SF(tons)	462,669	1992 Policy Paper (Data compiled by DSWS) -- See Exhibit H
Number of SF Households	219,983	Maryland-National Capital Park and Planning Commission("M-NCPPC")-- See Exhibit E

1. Determine the percentage of SF waste generated to total waste generated.
  - $462,669 / 938,890 = 49.28\%$
2. Determine the portion of the BSBC to be allocated to SF by multiplying the total BSBC times the above percentage.
  - $\$38,238,000 \times 49.28\% = \$18,843,686$
3. Determine the SF BSBC rate by dividing the cost allocated to SF households by the total number of SF households.
  - $\$18,843,686 / 219,983 = \$85.66$  per SF household

## BASE SYSTEMS BENEFIT CHARGE - MULTI-FAMILY HOUSEHOLDS

The multi-family ("MF") BSBC rate is calculated using the data in the following table.

	<u>Categories</u>	<u>Data</u>	<u>Source of Data</u>
Total BSBC		\$38,238,000	Council's Approved FY 1997 Budget -- See Exhibit G
Total waste disposed and exported by MF and NR (tons)		352,504	1992 Policy Paper (Data compiled by DSWS)
Total waste disposed and exported by MF (tons)		98,870	1992 Policy Paper (Data compiled by DSWS)
Number of MF Households		103,791	M-NCPPC-- See Exhibit E

1. Determine the portion of the BSBC to be allocated to MF and NR segments by subtracting the portion allocated to SF from the total BSBC and then dividing that sum by the BSBC.
  - $(\$38,238,000 - \$18,843,686) = \$19,394,314$
  - $\$19,394,314 / \$38,238,000 = 50.72\%$
2. Determine MF waste disposed and exported as a percentage of total MF and NR waste disposed and exported.
  - $98,870 / 352,504 = 28.05\%$
3. Determine the portion of the BSBC allocable to MF households by multiplying BSBC allocated to MF and NR (see #1 above) by the percentage of MF waste disposed within and exported from the County.
  - $\$19,394,314 \times 28.05\% = \$5,440,105$
4. Determine the BSBC rate allocable to the MF segment by dividing the above multi-family BSBC by the number of MF households.
  - $\$5,440,105 / 103,791 = \$52.41$  per MF household

## BASE SYSTEMS BENEFIT CHARGE - NONRESIDENTIAL

The nonresidential ("NR") BSBC rate is calculated using the data in the following table and other information, as noted below.

<u>Categories</u>	<u>Data</u>	<u>Source of Data</u>
Total BSBC	\$38,238,000	Council's Approved FY 1997 Budget -- See Exhibit G
Total waste disposed and exported by MF and NR (tons)	352,504	1992 Policy Paper (Data compiled by DSWS)
Total waste disposed and exported by NR (tons)	253,634	1992 Policy Paper (Data compiled by DSWS)

The County has developed waste generation categories within the NR classification to present an equitable solution for distributing the BSBC, since various enterprises have differing waste generation profiles. The County has segmented the waste generation categories on a continuum from low to high. These categories are determined based on property tax records which include the type of enterprise occupied. Typical low generator classifications of nonresidential property include parking lots and churches or synagogues. High generator classifications would generally be for properties such as restaurants or gas stations.

The following table summarizes the waste generation categories and how the County determines the category based on pounds of waste per square foot generated. Also included are the square footage totals for each generator category. The square footage totals are derived from the County's property tax records, and are segregated within the generator categories based on data in the County's records related to the type of nonresidential enterprise located on the given property. The DSWS has determined the waste generator categories based on its assessment of waste generation characteristics for a given type of enterprise.

<u>Generator Category</u>	<u>Waste Generated (lbs per sq. ft.)</u>	<u>Square Footage Totals</u>	<u>Source of Data</u>
Low	0 to 2	6,437,918	Property Tax Records
Medium Low	> 2 to 4	76,715,863	Property Tax Records
Medium	> 4 to 6	23,289,815	Property Tax Records
Medium High	> 6 to 8	15,290,256	Property Tax Records
High	> 8	1,281,433	Property Tax Records

The County determined it would assess the NR systems charge for each 2,000 square feet of improved property. These "chargeable units" for each NR category are calculated by taking the property's improved gross floor area (in square feet) and dividing that amount by 2,000. Below is the resultant calculation of chargeable units based on taking the square footage amounts in the table above, in each generation category, and dividing each by 2,000 square feet per chargeable unit.

## BASE SYSTEMS BENEFIT CHARGE- NONRESIDENTIAL (continued)

An example of the calculation for the low generator category follows:

- $6,437,918 \text{ square feet} / 2,000 \text{ square feet per chargeable unit} = 3,219 \text{ chargeable units}$

<u>Generator Category</u>	<u>Chargeable Units</u>
Low	3,219
Medium Low	38,358
Medium	11,645
Medium High	7,645
High	641

The County has set by regulation a multiplier (which is approved by the County Executive) for the purpose of developing effective chargeable units ("EUs") per waste generation category. The multipliers are developed in relation to the "generator category" and are calculated below. The chargeable units are then multiplied by the multipliers to produce the EUs. These EUs are further utilized to determine the combined BSBC and ISBC.

<u>Generator Category</u>	<u>Multiplier Calculation (in lbs/sq ft divided by 5 lbs/sq ft)</u>	<u>Multiplier</u>	<u>Chargeable Units</u>	<u>Effective Chargeable Units</u>
Low	1 / 5	.2	3,219	644
Medium Low	3 / 5	.6	38,358	23,015
Medium	5 / 5	1.0	11,645	11,645
Medium High	7 / 5	1.4	7,645	10,703
High	9 / 5	1.8	641	1,153
<b>Total Effective Chargeable Units</b>				<b>47,160</b>

After the effective chargeable units are determined the rates allocable to the NR sector includes the following steps.

1. Determine the portion of the BSBC to be allocated to MF and NR segments by subtracting the portion allocated to SF from the total BSBC and then dividing that sum by the BSBC.
  - $(\$38,238,000 - \$18,843,686) = \$19,394,314$
  - $\$19,394,314 / \$38,238,000 = 50.72\%$
2. Determine NR waste disposed and exported as a percentage of total MF and NR waste disposed and exported.
  - $253,634 / 352,504 = 71.95\%$

### BASE SYSTEMS BENEFIT CHARGE- NONRESIDENTIAL (continued)

3. Determine the portion of the BSBC allocable to the NR sector by multiplying the BSBC allocated to MF and NR (see #1 above) by the percentage of NR waste disposed within and exported from the County.

- $\$19,394,314 \times 71.95\% = \$13,954,209$

4. For the NR sector, the County includes within the total rate, an incremental systems benefit charge (which will be discussed further, "ISBC") to cover the cost of education and outreach services provided to the nonresidential sector. These services include printing pamphlets, presentations by the DSWs and other types of costs which highlight the County's requirement to recycle. This incremental systems benefit charge to the NR sector is \$406,005, which is based on the budgeted costs of recycling education and outreach services, and is divided ratably among the various generator categories based on effective chargeable units.

5. The rate per chargeable unit is derived by taking the sum of the BSBC and ISBC and dividing by the effective chargeable units.

- $(\$13,954,209 + \$405,140) / 47,160 \text{ chargeable units} = \$304.50 \text{ per chargeable unit}$

6. The rate per chargeable unit is then multiplied by the multiplier, (discussed above) to come up with the County's combined BSBC and ISBC rate per improved 2,000 square feet, for each generator category. Below is an example of the calculation for the Medium High category, with a table following which details the total rates for each category.

- $\$304.50 \times 1.4 = \$426.27$

<u>Generator Category</u>	<u>Combined BSBC/ISBC Rate</u> <u>(in \$ per 2,000 sq ft)</u>
Low	\$60.90
Medium Low	\$182.70
Medium	\$304.50
Medium High	\$426.31
High	\$548.11



## INCREMENTAL SYSTEMS BENEFIT CHARGE - SINGLE FAMILY HOUSEHOLDS

The single family ISBC rates for the unincorporated areas are calculated based on the data shown in the following table, which also indicates the source of such data. SF households within the Municipalities such as Gaithersburg, the Town of Chevy Chase, and others, are not assessed an ISBC by the County, but must comply with statutory recycling regulations through either private contractors or other means.

<u>Definition</u>	<u>Data</u>	<u>Source</u>
Total ISBC	\$12,770,772	Council's Approved FY 1997 Budget -- See Exhibit E
ISBC for NR	\$405,140	DSWS Spreadsheets-- See Exhibit E
ISBC for MF	\$165,767	DSWS Spreadsheets-- See Exhibit E
Unincorporated SF Households	188,669	M-NCPPC-- See Exhibit E
Total MF Households	103,791	M-NCPPC-- See Exhibit E

1. Determine the ISBC related to SF by taking the total recycling charges (ISBC) less the ISBCs related to NR and MF.

- $\$12,770,772 - (\$405,140 + \$165,767) = \$12,199,865$

2. Determine the ISBC rate allocated to unincorporated SF households by dividing the ISBC related to SF by the number of unincorporated SF households.

- $\$12,199,865 / 188,669 = \$64.66$  per Unincorporated SF Household

## INCREMENTAL SYSTEMS BENEFIT CHARGE - MULTI-FAMILY HOUSEHOLDS

The ISBC allocated to MF households is comprised of educational, enforcement and outreach services which were briefly discussed in the introduction to this section. Unlike the SF households, the municipalities also share in these education, enforcement and outreach services.

1. Determine the ISBC rate allocated to MF households by taking the direct costs of such services and dividing by the number of unincorporated and municipality MF households.

- $\$165,767 / 103,791 = \$1.60$  per MF Household

## DISPOSAL TIP FEE

<u>Definition</u>	<u>Data</u>	<u>Source</u>
Total Disposal Tip Fee	\$20,636,000	Council's Approved FY 1997 Budget -- See Exhibit E
Charge Per Ton	\$44.00	Council Resolution No. 13-523
MF Waste Disposed	86,781	1992 Policy Paper (Data compiled by DSWS)
Municipal SF Waste Disposed	30,453	1992 Policy Paper (Data compiled by DSWS)
NR Waste Disposed	131,748	1992 Policy Paper (Data compiled by DSWS)
County Government Waste Disposed	23,800	1992 Policy Paper (Data compiled by DSWS)

The County charges disposal fees for waste tipped at the transfer station. These fees come from both SF property owners in the unincorporated areas, based on an assumed usage as indicated in the above table, and from individual parties that tip waste at the transfer station.

Although the total disposal costs are approximately \$61.4 Million, the County recovers a portion of these charges through the BSBC, and through other revenue producing activities of solid waste operations. The total disposal costs include items such as debt service, operation and maintenance costs of the Resource Recovery Facility, and other miscellaneous costs. The actual fees recovered through tipping are approximately \$20.6 Million, and are detailed below.

1. Determine the fees recovered by unincorporated SF households by multiplying the total tons of waste disposed by unincorporated SF households by the tipping fee.
  - $196,238 \times \$44.00 = \$8,634,472$
2. Determine the fees recovered by MF households (through tipping) by multiplying the total tons of waste disposed by MF households by the tipping fee.
  - $86,781 \times \$44.00 = \$3,818,364$
3. Determine the fees recovered by municipal SF households (through tipping) by multiplying the total tons of waste disposed by municipal SF households by the tipping fee.
  - $30,453 \times \$44.00 = \$1,339,332$
4. Determine the fees recovered by the NR sector (through tipping) by multiplying the total tons of waste disposed by the NR sector by the tipping fee.
  - $131,748 \times \$44.00 = \$5,796,912$
5. Determine the fees recovered by the County government (through tipping) by multiplying the total tons of waste disposed by the County government by the tipping fee. Based on information obtained from DSWS, the items disposed by the County Government are primarily items from the Department of Public Works and Transportation.
  - $23,800 \times \$44.00 = \$1,047,200$

## COLLECTION FEE

The total costs of refuse collection are divided among residents within the collection district based on the number of times a week that the refuse is collected. The majority of costs associated with these collections are contracts with independent collection firms, such as Laidlaw and BFI. Approximately \$1.5 Million of the total collection cost base is for administration of the collection process.

The table below indicates key data used to calculate the collection rate per household. The rate per household is developed from two components -- (1) an administrative component which is evenly spread over the population receiving collection services, and (2) direct contract costs attributable to refuse collection within the specific collection district. An important facet of this calculation is that the County has changed its collection policy, in the collection districts, such that certain districts which previously received two collections per week are being phased down to one per week. This accounts for the difference between the full year, once per week and the partial year, once per week, in that the partial year once per week are being phased from two collections down to one.

<u>Definition</u>	<u>Data</u>	<u>Source</u>
Total Trash Collection Costs (includes Admin.)	\$7,094,000	Council's Approved FY 1997 Budget -- See Exhibit E
Total Administrative Costs (including transfer to GF)	\$1,478,913	DSWS Spreadsheets
Trash Contractual Costs - Full Year, Once per Week	\$880,798	DSWS Spreadsheets
Trash Contractual Costs - Part Year, Once per Week	\$4,734,616	DSWS Spreadsheets
Full Year (Once Per Week - households)	23,077	DSWS Spreadsheets
Part Year (Once Per Week - households)	61,721	DSWS Spreadsheets

1. Determine the administrative rate allocation to the entire trash collection population by dividing the total administrative costs by the sum of the total households.

- $\$1,478,913 / (23,077 + 61,721) = \$17.44$  per Household

### COLLECTION FEE (continued)

2. Determine the collection rate for household trash collection once per week for the full year by dividing the total contractual collection costs for the full year, once per week collection by the population of households collected once per week over the full year.

- $\$880,798 / 23,077 = \$38.17$  per Household

3. Determine the average rate calculation for household trash collection once per week for the partial year by dividing the total contractual collection costs for the partial year, once per week collection by the population of households collected once per week for a part of the year.

- $\$4,734,616 / 61,721 = \$76.71$  per Household

4. Determine both the total rates allocated to the once per week, full year, and once per week partial year collections by adding the administrative rate plus the allocated rate based on the contractual costs.

- Full Year - Once per week =  $\$17.44 + \$38.17 = \$55.61$  per Household

- Part Year - Once per week =  $\$17.44 + \$76.71 = \$94.15$  per Household

## LEAF VACUUMING FEE

The County provides leaf vacuuming services primarily to single family households within the leaf vacuuming district, with a smaller portion of multi-family residential households which receive these services. Almost all of the single family household districts within the unincorporated areas of the County receive these services, except Districts 10 and 12. Additionally, there are minimal numbers of municipal areas which receive leaf vacuuming services. Below is a table with key data in developing the costs of these services per household.

<u>Definition</u>	<u>Data</u>	<u>Source</u>
Total Leaf Vacuuming Costs	\$3,082,000	Council's Approved FY 1997 Budget -- See Exhibit E
Single Family Households receiving vacuuming services	76,900	DSWS Spreadsheets-- See Exhibit E
Multi-family Households receiving vacuuming services	39,400	DSWS Spreadsheets-- See Exhibit E

The County developed four scenarios in which these costs would be allocated, as follows.

1. Single family and multi-family charged equal amounts.
2. No multi-family units charged or provided services.
3. Single family charged twice as much as multi-family.
4. Single family charged three times as much as multi-family.

Based on our understanding from DSWS and in analyzing the spreadsheets, the Council opted for the scenario in which single family paid twice as much as multi-family. Below are the rate calculations for both single and multi-family households.

1. Determine the percentage of total costs allocable to single family by taking the number of households multiplied by two, plus the number of multi-family households. Then divide single family multiplied by two by the denominator.
  - $(76,900 \times 2) + 39,400 = 193,200$  (Denominator)
  - $(76,900 \times 2) / 193,200 = 79.6\%$
2. Multiply the above percentage by the total leaf vacuuming costs to determine the portion allocable to single family households.
  - $\$3,082,330 \times 79.6\% = \$2,453,535$
3. Determine the leaf vacuuming rate per household by dividing the above amount by the number of single family households.
  - $\$2,453,535 / 76,900 = \$31.90$  per Single-family Household
4. Determine the leaf vacuuming rate per multi-family household by dividing the above percentage by two.
  - $\$31.90 / 2 = \$15.95$  per Multi-family Household

## **OVERALL RESULTS AND RECOMMENDATIONS**

The discussion in this section summarizes our overall results and provides several recommendations for improvement in internal and external reporting, and the clarification of reporting the County Government's share of the base systems benefit charge.

### **Overall Results**

Based on the procedures previously enumerated, the County's current rate methodology is a rational basis for calculating the rates and fees charged to its customers. The calculations appear to be consistently applied and based on historical data collected by the Division of Solid Waste Services ("DSWS"). Where applicable, DSWS has had waste generation studies performed and consulted with experts in developing their assumptions.

### **Recommendations**

1. Develop Plans for Updating Assumptions Used in the Methodology
2. Enhance Communication to the Public Related to Fees Charged
3. Review the Allocation of the County Government's Share of the BSBC
4. Develop Management Information Reporting Package

On the following pages, we discuss in more detail our overall results and each of the recommendations.

## OVERALL RESULTS

Based on the procedures performed, discussions with County personnel involved in the preparation of the rate calculation, and our review of industry related documentation, the current rate methodology and calculation is reasonable.

- The actual equations used to determine the rates have been tested, as noted above, and accurately calculate the rates based on the cost information provided and assumptions used.
- The assumptions used by the DSWS to determine the allocation between single family, multi-family and nonresidential properties are reasonable and rational. The assumptions made by the County with respect to cost data was derived from appropriate source documents such as the CAFR, the Council's FY 1997 Approved Budget and the County's solid waste projections paper entitled, *Solid Waste Projections - Montgomery County Solid Waste Management System*, produced in July 1992. Additionally, based on our review and understanding of the guidelines of Chapter 48 of the Montgomery County Code, the rate methodology is prepared in accordance with the Code.
- The allocation of indirect costs is reasonable and consistent based on our overall understanding of the County-wide process.
- All costs used in the methodology are reasonable and appropriate. See Exhibits B, C and D for an analysis of costs based on functional and natural cost categories. The natural cost categories are the actual costs which go into each of the County's programs, and reflect actual types of costs such as debt service, operations and maintenance, personnel costs, etc.
- The only area of concern with the methodology is whether the assumptions used are the most up-to-date information available based on the County's current solid waste disposal policy.

## OVERALL RECOMMENDATIONS

### 1. Develop Plans for Updating Assumptions Used In The Methodology

The current rate calculation methodology uses assumptions developed five years ago. While we agree with how the assumptions are used, and note that overall revenue from the programs will not materially change, such assumptions should be updated to provide more accurate allocation data of the costs being incurred on a year-to-year basis. The frequency of the review/update of the assumptions should more closely follow changes in County policy than with actual number of years. Assumptions developed in 1992 for 1997 would be acceptable if no changes in policy, such as level of recycling, has occurred. However, if the recycling goal has changed or the kinds of recyclable material is increased, then the assumptions should be reviewed.

Our understanding from staff is that the overall recycling profile of the County has changed since the 1992 waste and disposal analysis was performed, which could result in changes to how the County would allocate such costs. This review is documented in the *"1992 Policy Paper - Solid Waste Projections - Montgomery County Solid Waste Management System"*. This policy paper documents the results of the review which included solid waste tonnage generated, waste disposed of in-county, waste exported, and certain other recycling statistics.

We understand that several of the assumptions determined in the above analysis are being updated during fiscal year 1998 for implementation in the fiscal year 1999 budget cycle. The Division of Solid Waste Services should ensure that these assumptions are consistent with solid waste disposal and recycling goals of the year 2000 and beyond.



## OVERALL RECOMMENDATIONS(continued)

### 2. Enhance Communication To The Public Related To Fees Charged

We understand that public perception related to the "perceived" high cost of waste disposal and recycling is a major concern of the Council. Our review of industry information included a review of several materials which communicated data cost to the public. One solid waste organization compared the daily cost of waste collection and disposal to other items used by the public on a daily basis to demonstrate the relative cost of such solid waste charges.

Potential costs to compare to Disposal rates:

• Can of Soft Drink	\$0.55
• Washington Post (daily)	\$0.25
• Local phone call	\$0.25
• Garbage disposal	\$0.23*
• Recycling	\$0.18**

\*Single Family -- BSBC

\*\*Single Family

While this focuses on the cost of disposal and collection, the community may also be concerned with the "make-up" of the fees they are charged. To this end, the County may consider using the pie-charts such as those included in this report as a guide to communicating what costs the fees cover. As an additional communication tool, the County may consider several "what if?" charts, focusing on how costs may change as recycling increases. The variable nature of such costs may enhance the public's understanding of the cost drivers of different disposal and collection alternatives.

### 3. Review The Allocation Of The County Government's Share Of The BSBC

Currently, the County government's share of the base system's benefit charge is included with and borne by the non-residential sector in the overall rate calculation. Of the total nonresidential disposal of 155,548 tons, the County government's share of this is approximately 23,800 tons, or 15 percent. This represents approximately \$2.2M of the base systems benefit charge allocated to nonresidential property owners. The 23,800 tons is comprised primarily of construction type materials refuse produced by the Department of Public Works and Transportation. It does not include the school system or any other component units. Additionally, it is our understanding that refuse from the County office buildings is tipped at the transfer station and paid by the service provider who contracts for collection services with the various County offices.

We recommend that the County either spread its costs over the entire population, or reserve or make an appropriation to cover such costs as they are incurred.

## OVERALL RECOMMENDATIONS(continued)

### 4. Develop Management Information Reporting Package

Based on the procedures performed and the interviews we conducted, it is very difficult, from the information prepared related to the allocation of costs and the determination of the rates, to form a good understanding of the actual cost to process one ton of waste and the variables that drive that cost.

We recommend that the County develop a management information reporting package which will allow the County Council and other decision makers the opportunity to see summarized rate calculation information and variable information. Such information will allow for a more focused review of the rate information and give the user an opportunity to achieve a better evaluation of the rate calculation. Additionally, it will more clearly demonstrate the impact of changes to certain key assumptions, such as usage at the transfer station.

The reporting package should be separated into three parts:

- Summarized information relative to the various rates;
- Analysis of key variable information; and
- Comparison of budget to actual results.

#### 4a. Summarized Information Related To The Various Rates

The amount of detailed information the County Council receives related to the calculation of the disposal and recycling rates appears to be overwhelming. Therefore, this reporting package should include summarized data related to each of the rates. At a minimum, the analysis of the rates should include the following.

- Explanation of charges and how they are recovered,
- High-level summary of costs to be recovered,
- Sector of the population included for each rate,
- Assumptions and how determined/verified,
- Method to spread the costs over the population -- Brief summary of formulas,
- Actual rate calculation -- Should allow user to calculate a per ton cost, and
- Current year costs and rate calculation

It is imperative that County staff preparing this information understand what information the County Council members need in order to make effective, informed decisions, and to work with them to develop an acceptable package. Although this data is currently in various formats, we believe that if the parties involved in the processes had a clear direction and understanding of why the information is being requested, and the need for such information, the package could be adapted to include the requested information.

## **OVERALL RECOMMENDATIONS(continued)**

### **Develop Management Information Reporting Package (continued)**

#### **4b. Provide The Council With Variable Information**

Several of the assumptions used in the rate calculation are based on an estimation of usage and several assumptions on the waste/recycling activities within the County. We believe that given the fact that several of the calculations, most specifically the tipping fee, are significantly effected by variable activity, such alternative scenarios are vital to a fully informed decision process.

The management information reporting package should include several scenarios. The scenarios should provide management with an analysis of usage estimates and the related variable revenues and costs. These scenarios should also allow the users to evaluate the impact of different recycling and waste disposal goals or assumptions. A summary could then be prepared for presentation, highlighting the different assumptions used and the impact on revenues and costs. As discussed earlier, such information will allow the reader to better understand the rate calculation process and make a more informed decision when establishing rates.

#### **4c. Comparison Of Budget To Projected/Actual Results**

Currently, the Division of Solid Waste has been having difficulties in monitoring budget to actual information from FAMIS, due to FAMIS implementation issues. It is our understanding that the Department of Finance and the Department of Information Systems and Telecommunications (DIST) are in the process of working out the issues affecting the data related to Solid Waste operations.

Once all issues are corrected, we believe the Division of Solid Waste should perform periodic, no less than quarterly, reviews of budget to actual results. This will allow management of the Division of Solid Waste and the County Council to track the financial status on a more timely basis and identify areas which may need mid-year focus. Additionally, the rate calculation assumptions should be reviewed annually to determine if revised assumptions are necessary.

## EXHIBITS

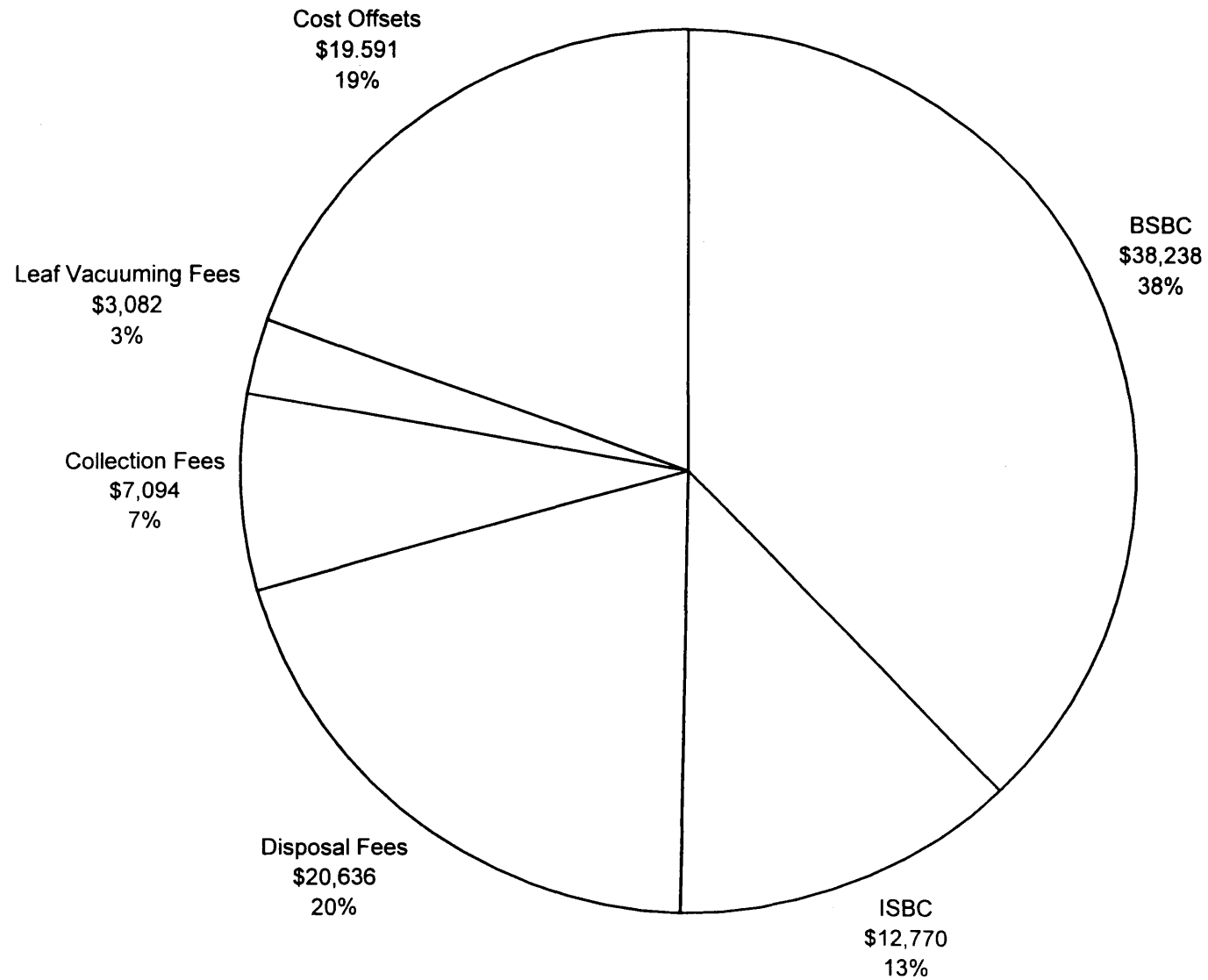
The following is a summary of the data contained within Exhibit A through Exhibit H.

- Exhibit A -- This chart provides a breakdown of the sources of funds charged to property owners, along with disposal tip fees. It also notes the overall cost offsets which include investment income, recovered materials and electric revenue.
- Exhibit B -- Overall picture of the solid waste system, broken down by natural cost classifications (personnel costs, debt service, collection contracts, etc.)
- Exhibit C -- This chart depicts the gross costs of solid waste by function, such as administrative, recycling, and disposal costs..
- Exhibits C-1 through C-6 -- These are detailed functional breakouts of Exhibit C, by natural cost classification such as debt service, personnel costs, etc.
- Exhibit D -- This schedule identifies the total costs of the solid waste system by function, for each of the programs, broken down by natural cost classification.
- Exhibit E -- This schedule details the disposal and collection fund revenues by source and recomputes those which are set by specific rates. The exhibit also allocates those sources of funds into the various categories of charges such as the BSBC, ISBC, Disposal Tip Fees, etc.
- Exhibit F -- Schedule of the overall sources and uses of funds within the system. This exhibit demonstrates all revenue sources, including credits earned, and indicates the uses (expenditures) directly relating to those revenue sources.
- Exhibit G -- This is a reconciliation of the total operating costs of the system to the base systems benefit charge.
- Exhibit H -- List of documents reviewed to develop an understanding of the County's and other solid waste systems, to perform the stated agreed-upon procedures.



**Sources of Funds, Gross**  
**(Based on FY 1997 Budget of Disposal and Collection Funds)**  
**(000's)**

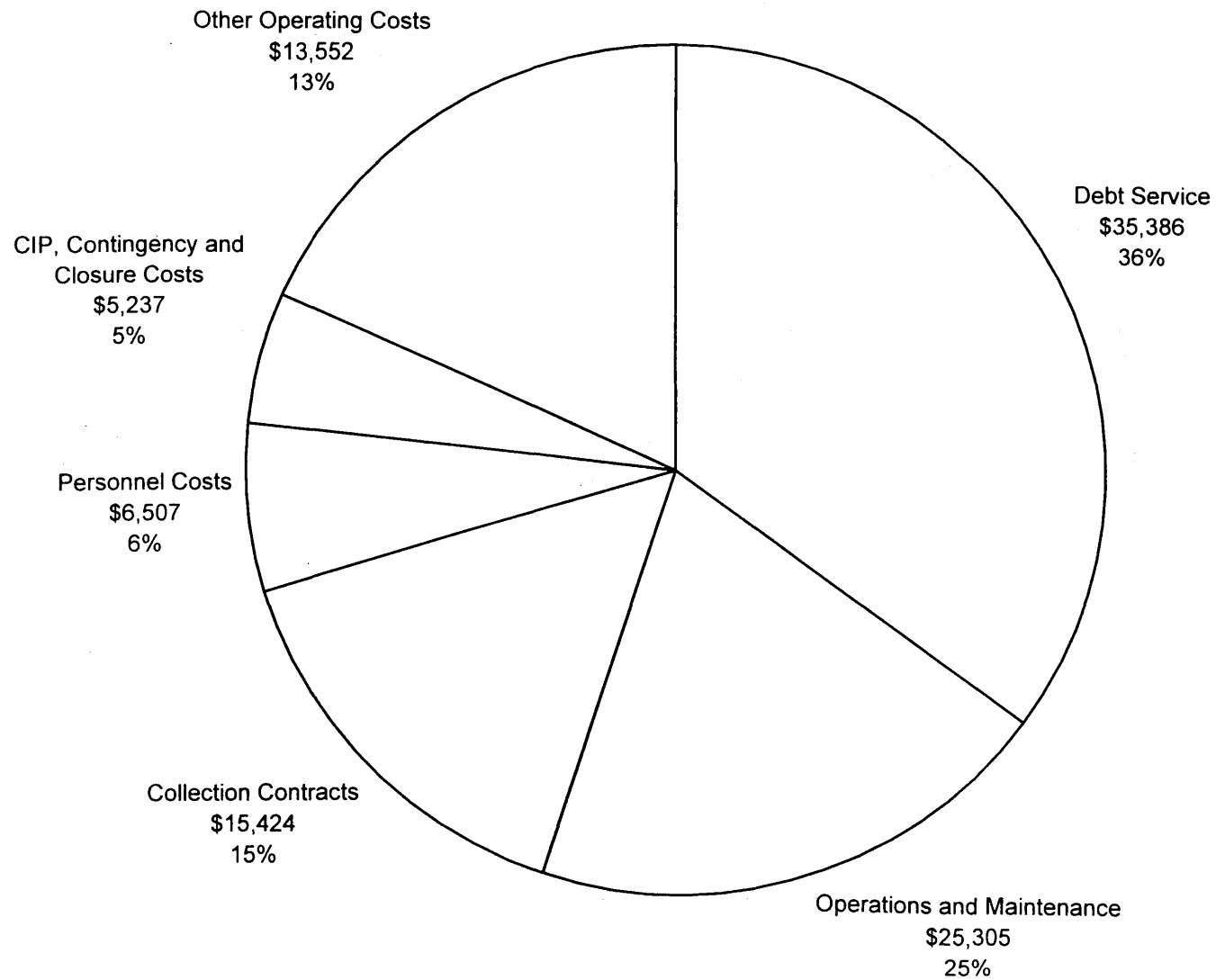
**Exhibit A**



**Total = \$101,411**

**Natural Cost Classifications, Gross**  
**(Based on FY 1997 Budget for Disposal and Collection Funds)**

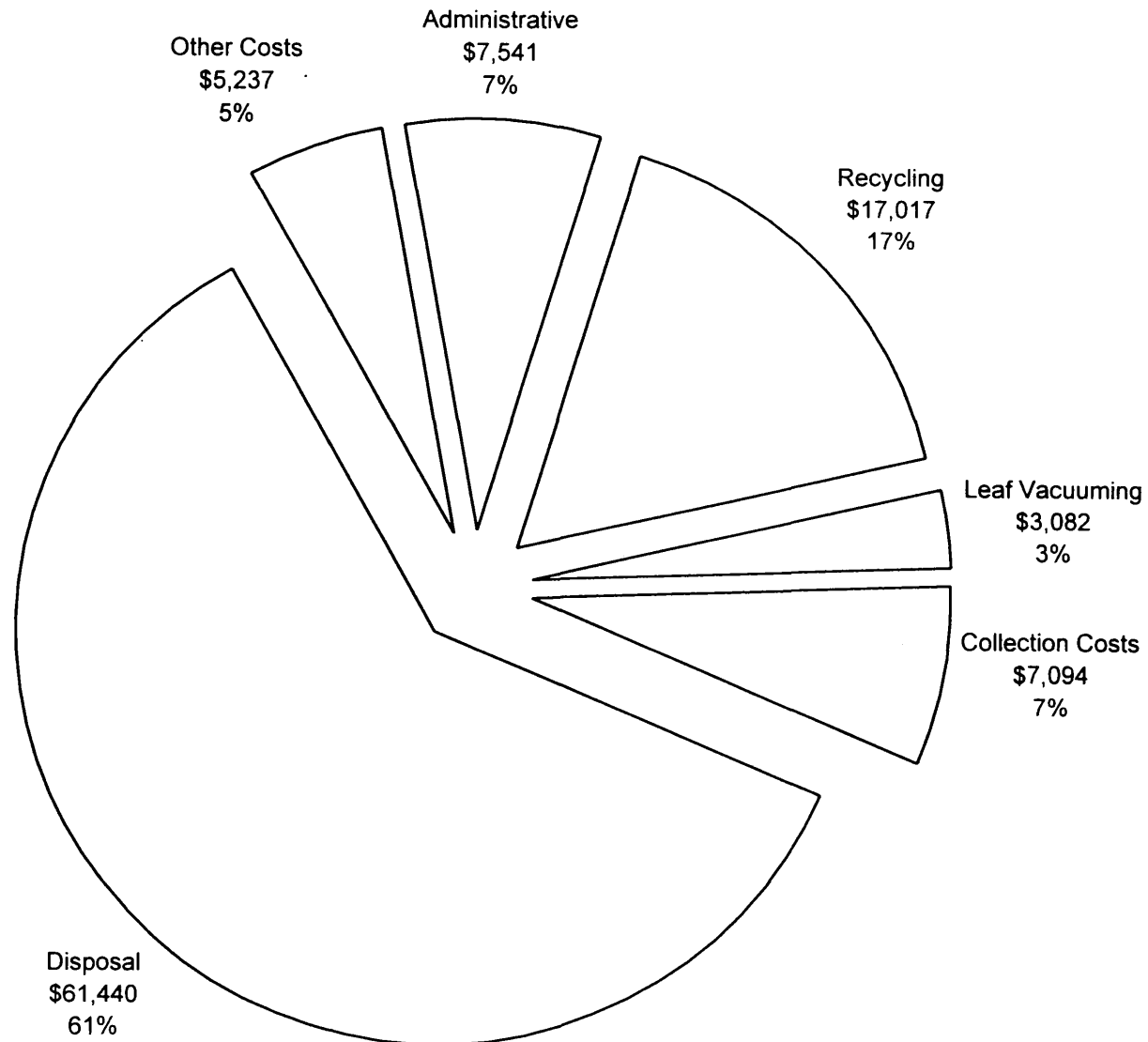
**Exhibit B**



Total = \$101,411

**Total Gross Cost of Solid Waste System by Function**  
**(Based on FY 1997 Budget for Disposal and Collection Funds)**  
**(000's)**

**Exhibit C**

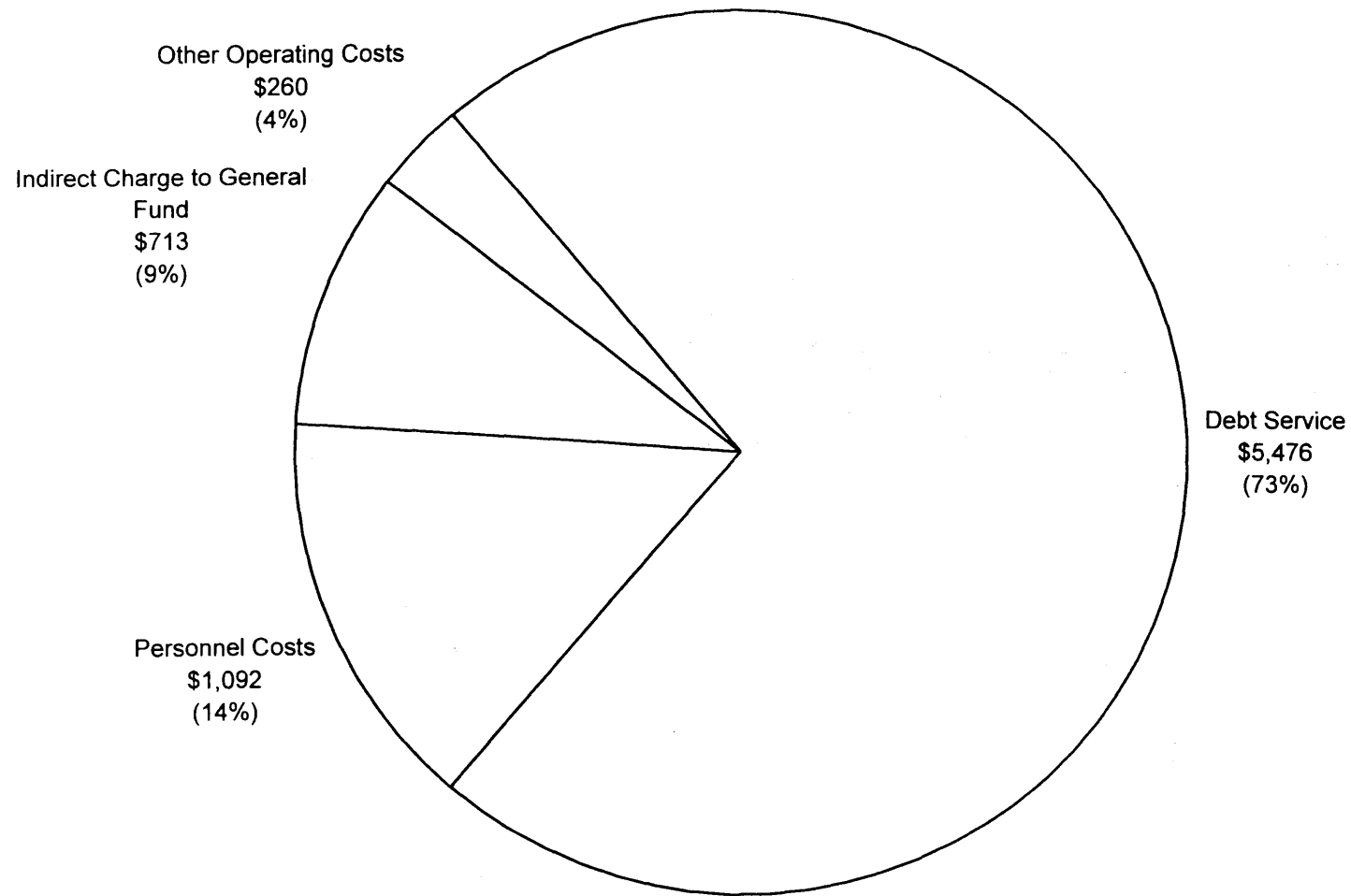


**Total = \$101,411**



**Administrative Costs, Gross**  
**(Based on FY 1997 Budget for Disposal and Collection Funds)**  
**(000's)**

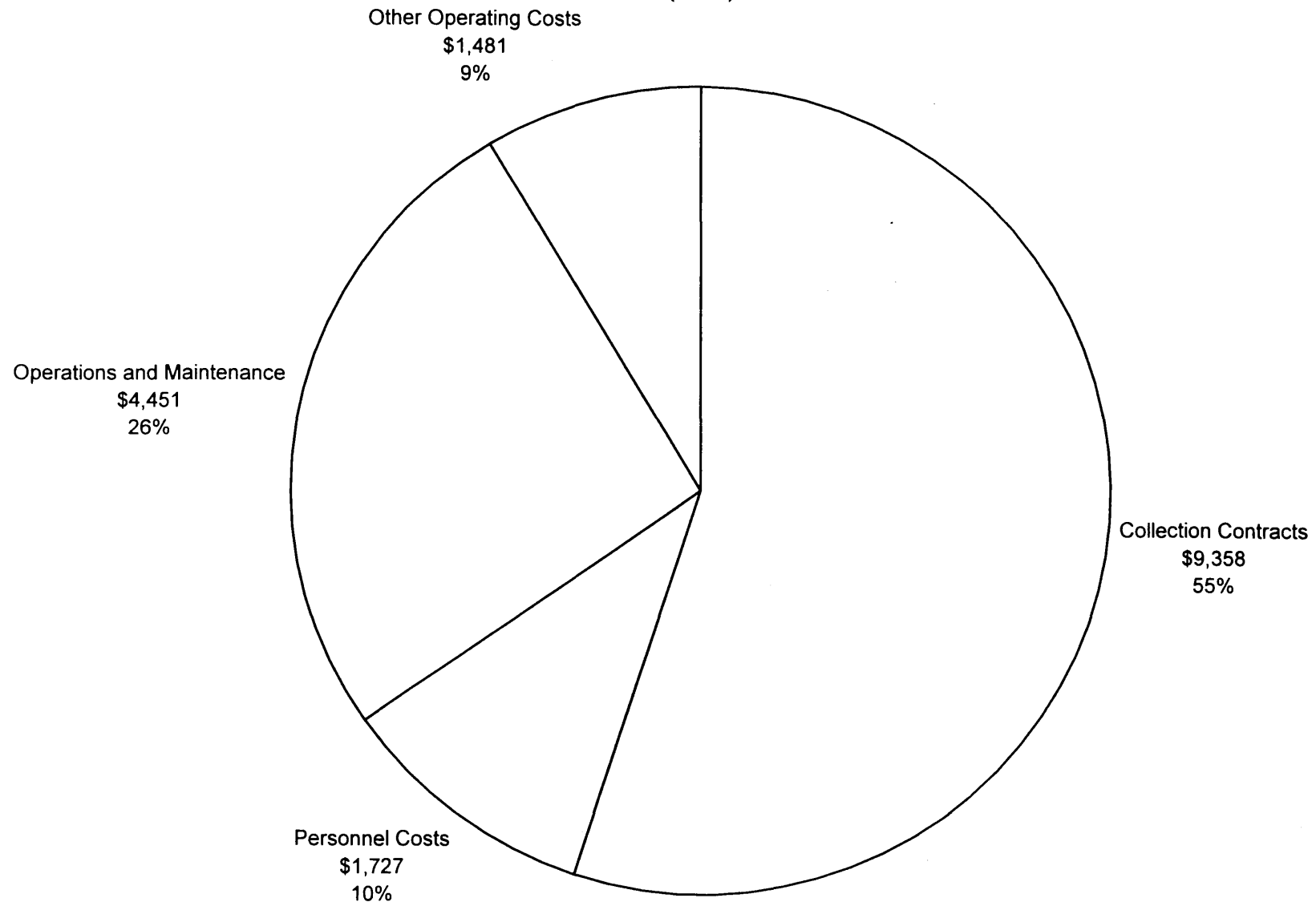
**Exhibit C-1**



**Total = \$7,541**

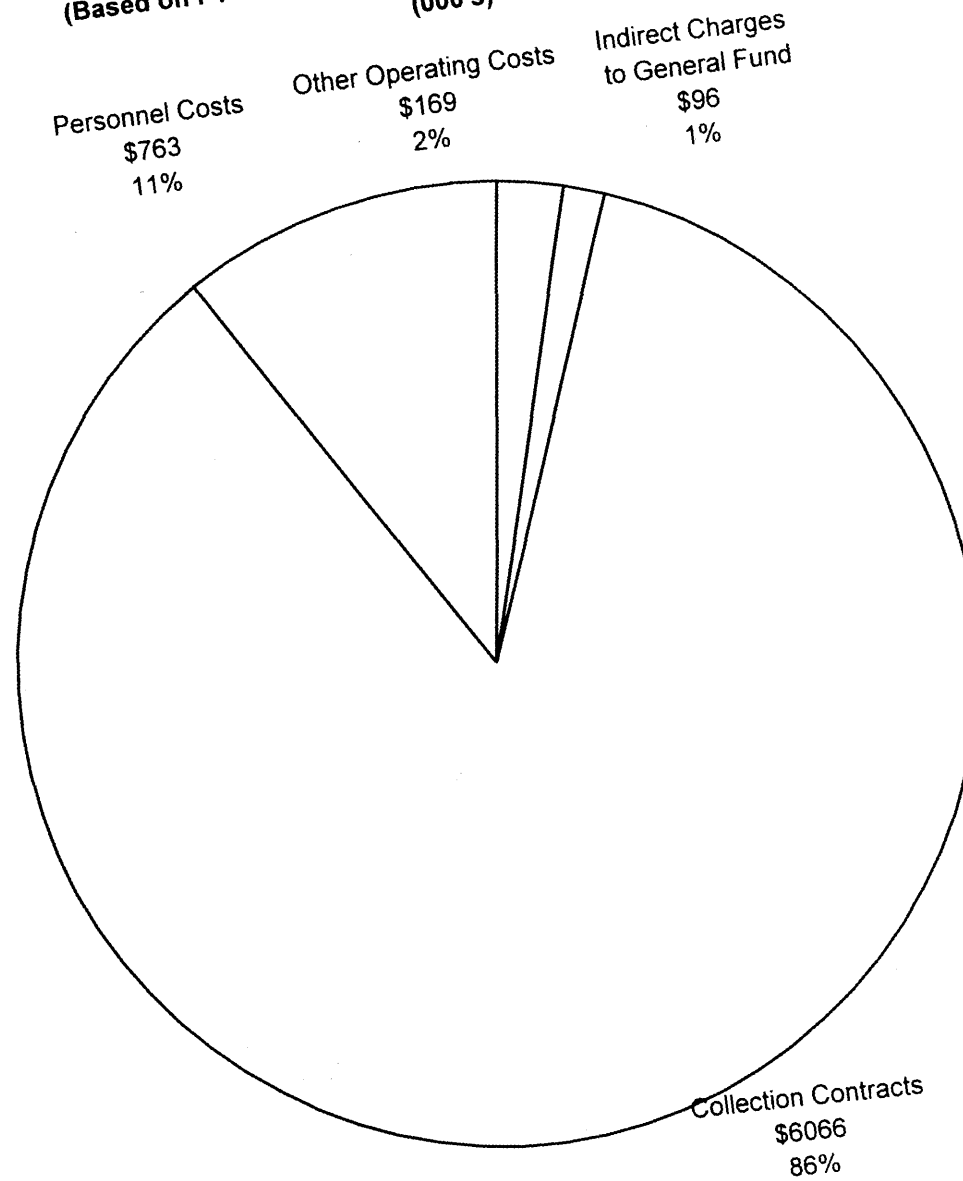
**Recycling Costs, Gross**  
**(Based on FY 1997 Budget for Disposal and Collection Funds)**  
**(000's)**

**Exhibit C-2**



**Total = \$17,017**

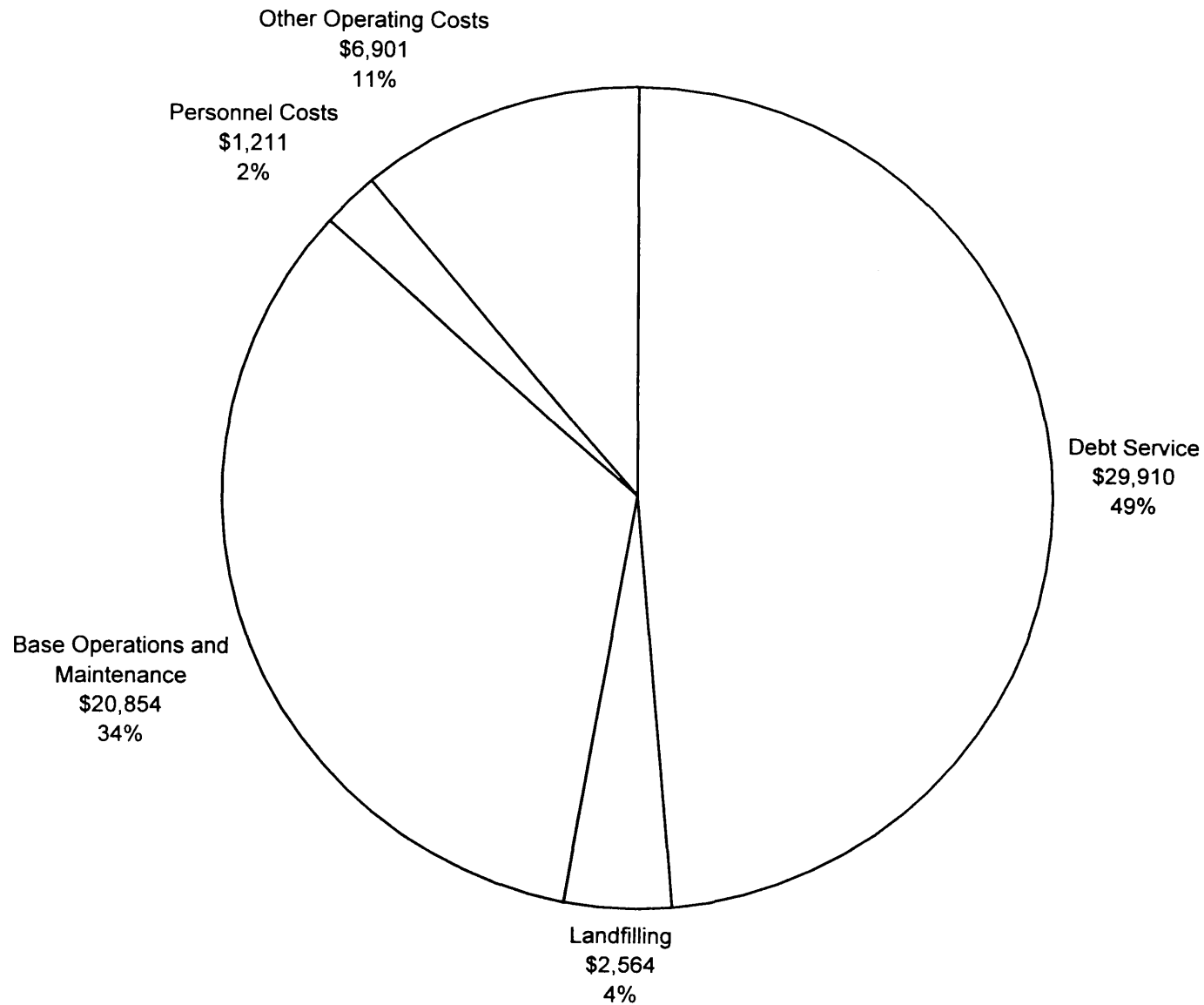
**Collection Costs, Gross**  
**(Based on FY 1997 Budget for Disposal and Collection Funds)**  
**(000's)**



Total = \$7,094

**Disposal Costs, Gross**  
**(Based on FY 1997 Budget for Disposal and Collection Funds)**  
**(000's)**

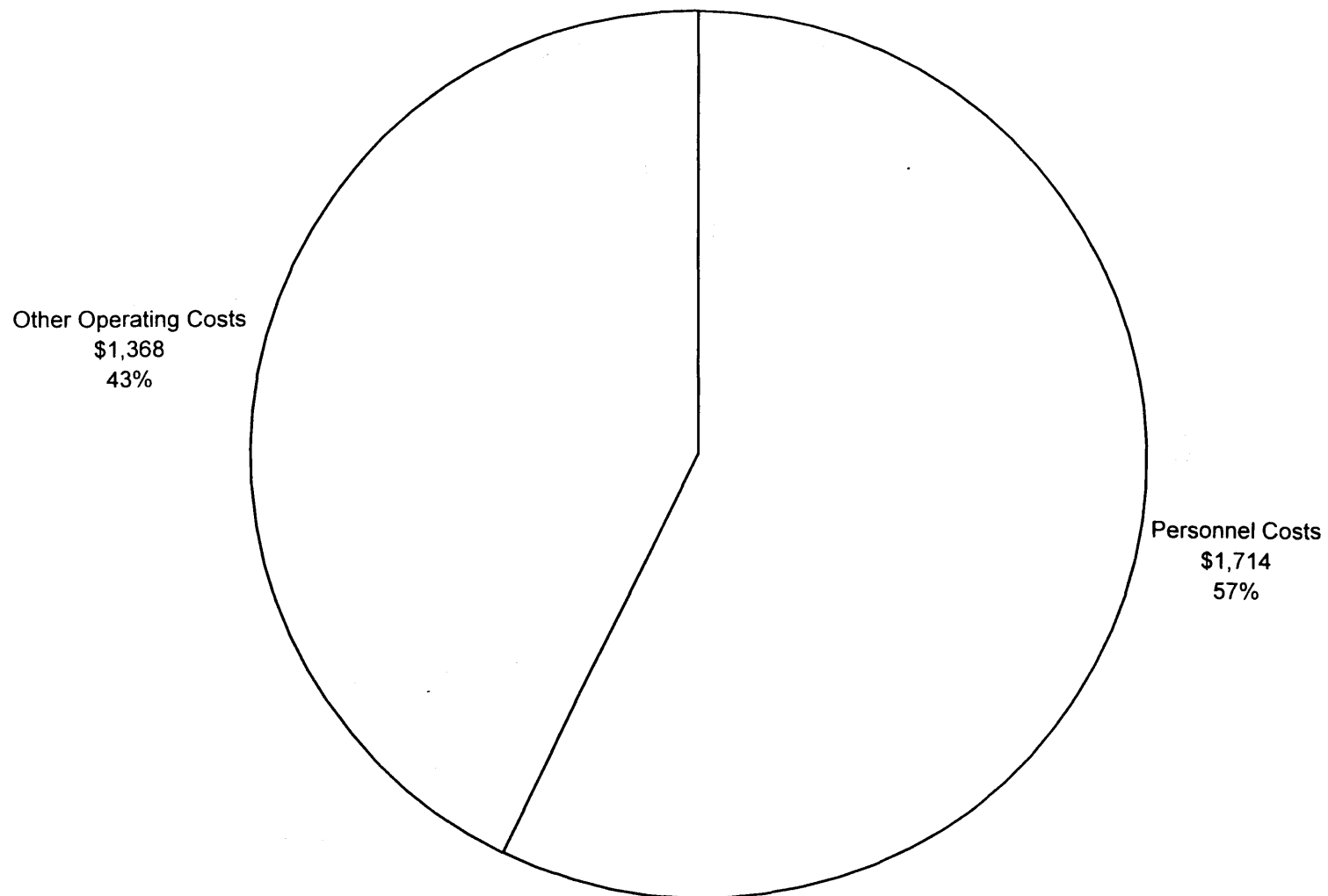
**Exhibit C-4**



**Total = \$61,440**

**Leaf Vacuuming Costs, Gross**  
**(Based on FY 1997 Budget for Disposal and Collection Funds)**  
**(000's)**

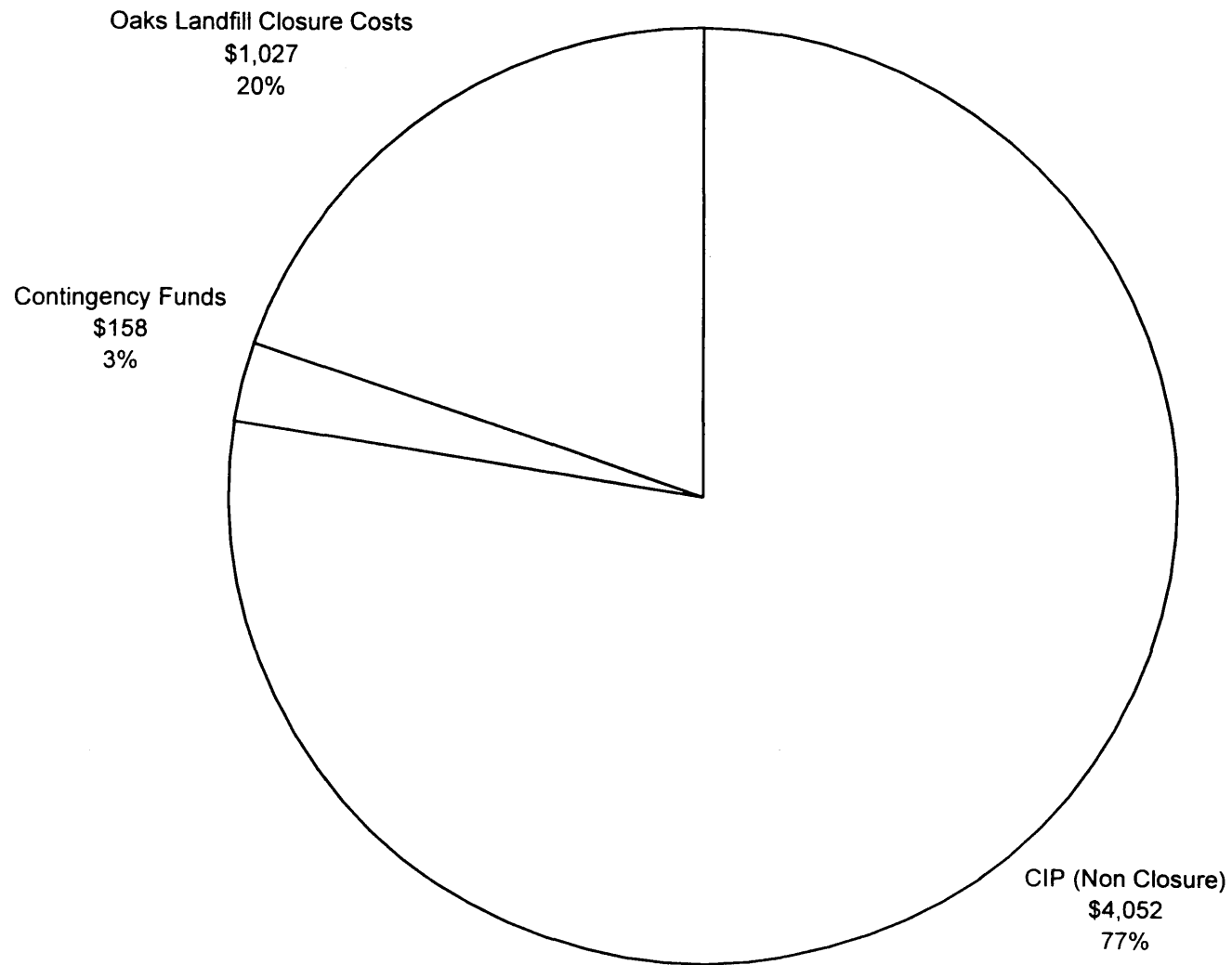
**Exhibit C-5**



**Total = \$3,082**

**Other Costs, Gross**  
**(Based on FY 1997 Budget for Disposal and Collection Funds)**  
**(000's)**

**Exhibit C-6**



**Total = \$5,237**

**Total Costs by Function**  
**(Based on FY 1997 Budget for Disposal and Collection Funds)**  
**(000's)**

**Exhibit D**

	<u>Administrative Costs</u>	<u>Recycling Costs (*)</u>	<u>Leaf Vacuuming Costs (*)</u>	<u>Collection Costs</u>	<u>Disposal Costs</u>	<u>Other Costs</u>	<u>Total Costs</u>
Debt Service	\$ 5,476				\$ 29,910		\$ 35,386
Operations and Maintenance		\$ 4,451			20,854		25,305
Landfilling					2,564		2,564
Personnel Costs	1,092	1,727	\$ 1,714	\$ 763	1,211		6,507
Other Operating Costs	260	1,481	1,368	169	6,901		10,179
Collection Contracts		9,358		6,066			15,424
Indirect Charge to General Fund	713			96			809
CIP (Non Closure)						\$ 4,052	4,052
Contingency Funds						158	158
Oaks Landfill Closure Costs						1,027	1,027
<b>Total Costs</b>	<b>\$ 7,541</b>	<b>\$ 17,017</b>	<b>\$ 3,082</b>	<b>\$ 7,094</b>	<b>\$ 61,440</b>	<b>\$ 5,237</b>	<b>\$ 101,411</b>

\* The County includes the leaf vacuuming costs on the DSWS Spreadsheets within recycling activities.

**Detailed Revenue Calculation**  
(Based on FY 1997 Budget of Disposal and Collection Funds)

**Exhibit E**

<u>Source of Funds</u>	<u>Rate</u>	<u>Assumptions</u>		<u>Estimated Total Revenue (000's)</u>	<u>BSBC</u>	<u>ISBC</u>	<u>Disposal</u>	<u>Collections</u>	<u>Leaf Vacuuming</u>	<u>Cost Offsets</u>
<b><u>Billed to Property Owners</u></b>										
BSBC (SF)	\$ 85.66	219,983 (HH)	\$	18,843	\$ 18,843					
BSBC (MF)	52	103,791 (HH)		5,440	5,440					
BSBC & ISBC (NR)	305	47,160 (ECU)		14,360	13,955	405				
ISBC (SF)	65	188,669 (HH)		12,199		12,199				
ISBC (MF)	2	103,791 (HH)		166		166				
Disposal Fees	44	469,020 (TN)		20,636			20,636			
Collection Fees (Admin. Rate)	17	84,798 (HH)		1,479				1,479		
Collection Fees (Once per Wk.)	38	23,077 (HH)		881				881		
Collection Fees (Twice per Wk.)	77	61,721 (HH)		4,734				4,734		
Leaf Vacuuming (SF)	32	76,900 (HH)		2,454					2,454	
Leaf Vacuuming (MF)	16	39,400 (HH)		628					628	
<b>Total Billed to Property Owners</b>				<b>\$ 81,820</b>	<b>\$ 38,238</b>	<b>\$ 12,770</b>	<b>\$ 20,636</b>	<b>\$ 7,094</b>	<b>\$ 3,082</b>	<b>\$ -</b>
<b><u>Cost Offsets</u></b>										
Electric Revenue		(G)	\$	5,611						\$ 5,611
Investment Income		(G)		4,450						4,450
Recovered Materials		(G)		3,472						3,472
Contribution of Fund Balance (Disposal Only)		(G)		3,226						3,226
Low Tonnage Credit		(G)		2,295						2,295
Composting Revenue		(G)		380						380
Other Recovered Material		(G)		157						157
<b>Total Sources of Funds</b>				<b>\$ 101,411</b>	<b>\$ 38,238</b>	<b>\$ 12,770</b>	<b>\$ 20,636</b>	<b>\$ 7,094</b>	<b>\$ 3,082</b>	<b>\$ 19,591</b>

HH = Households

ECU = Effective Chargeable Units

TN = Tons

G = Exhibit G

^ = See Collection Fee charts within report.



**Solid Waste System Sources and Uses of Funds**  
**(Based on FY 1997 Budget of Disposal and Collection Funds)**

**Exhibit F**

**Sources of Funds**

(000's)

Base Systems Benefit Charge	\$38,238
Disposal Fees	20,636
ISBC- SF and MF	12,365
ISBC- NR	405
Trash Collection Fees	7,094
Leaf Vacuuming Fees	<u>3,082</u>
Systems Charges and Fees	<u>81,820</u>

**Offsets to Achieve Required Funding Level**

Total Electric Revenue	5,611
Investment Income	4,450
Recovered Materials Revenue	3,472
SWDF Contribution (Fund Balance)	3,226
Low Tonnage Credit	2,295
Composting Revenue	380
Other Recovered Material Revenue	<u>157</u>
<b>Total Offsets to Achieve Required Funding Level</b>	<u>19,591</u>

<b>Total Sources of Funds</b>	<u><u>\$101,411</u></u>
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**Uses of Funds**

Debt Service	\$ 35,386
Operations and Maintenance	25,305
Other Operating Costs	13,552
Collection Contracts	15,424
Personnel Costs	6,507
CIP (Non Closure)	4,052
Oaks Landfill Closure Costs	1,027
Contingency Funds	<u>158</u>

<b>Total Uses of Funds</b>	<u><u>\$101,411</u></u>
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**Required Funding Reconciled to Base Systems Benefit Charge**  
**(Based on FY 1997 Budget for Disposal and Collection Funds)**  
**(000's)**

**Exhibit G**

Total Operating Costs		\$96,174
Add:		
CIP (Non Closure)	\$ 4,052	
Contingency Funds	158	
Oaks Landfill Closure Costs	<u>1,027</u>	
	5,237	
		<u>101,411</u>
Less- Revenue earned, including recovered materials, investment income, SWDF contribution, and other credits		<u>(19,591)</u>
<b>Net Required Funding</b>		<u>81,820</u>
Less:		
Recycling Charges (SFH)		(12,199)
Recycling Charges (MFH)		(166)
Recycling Charges (NR)		(405)
Disposal Fees (Tipping)		(20,636)
Collection Charges		(7,094)
Leaf Vacuuming Fees		<u>(3,082)</u>
<b>Base Systems Benefit Charge</b>		<u><u>\$38,238</u></u>

## **Listing of Documents Reviewed**

### **County Documents**

- **Council's Fiscal 1997 Approved Budget**
- **1992 Policy Paper - Solid Waste Projections - Montgomery County Solid Waste Management System**
- **Property Taxes - What You Need to Know About Them**
- **County Code Section 48 - *Solid Wastes***
- **County Council Resolution 13-523 - Solid Waste Charges**
- **DSWS Rate Calculation Methodology**
- **DSWS Line by Line Documentation of the Rate Calculation Spreadsheet**
- **DSWS Line by Line Documentation of the Fiscal Health Spreadsheet**
- **DSWS Crosswalk Between Rate Calculation Spreadsheet, Fiscal Health Spreadsheet and Budgetary Presentation**
- **Excerpts from 1995 Comprehensive Annual Financial Report**
- **Excerpts from various County Bond Official Statements**

### **Other Documents**

- **Annual Reports from the Southeastern Public Service Authority of Virginia**
- **Selected Performance Data from the Southeastern Public Service Authority of Virginia**
- **Annual Reports from the Delaware Solid Waste Authority**
- **Delaware Solid Waste Authority Proposed User Fee Memoranda**
- **Delaware Solid Waste Authority Comparison of Daily Costs**
- ***Accounting for Integrated MSW Management Costs -- From Solid Waste Technologies, March/April 1996 (Received from the Solid Waste Association of North America)***
- **Maryland Department of the Environment Waste Management Administration: Solid Waste Initiative- Phase One, Inventory and Assessment**