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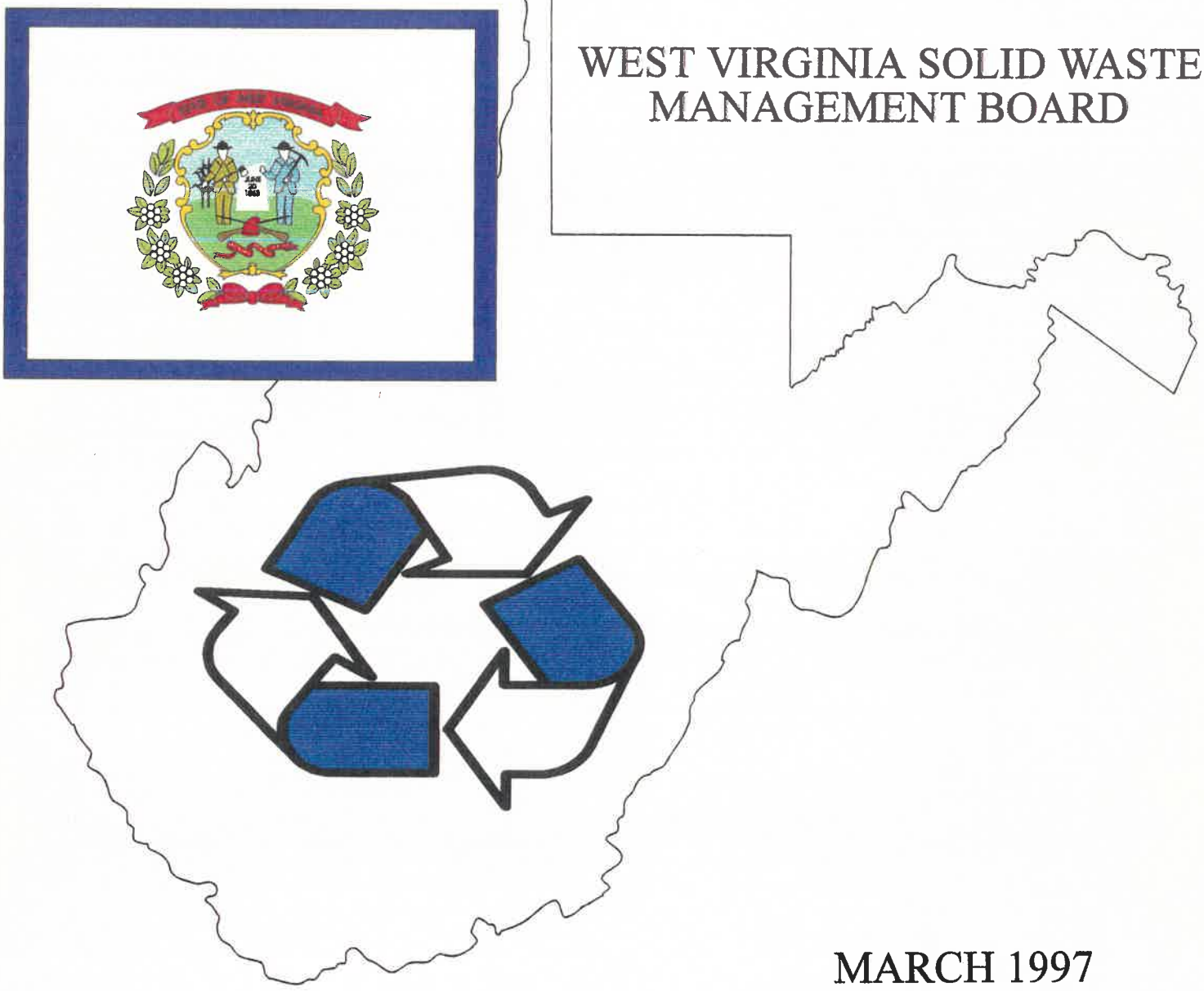
SOLID WASTE CHARACTERIZATION STUDY FOR WASTESHED F AND WASTESHED H IN WEST VIRGINIA



WEST VIRGINIA SOLID WASTE MANAGEMENT BOARD

MARCH 1997

PROJECT 95-569-01

SOLID WASTE CHARACTERIZATION STUDY FOR WASTESHED F AND WASTESHED H IN WEST VIRGINIA

SUBMITTED TO:

WEST VIRGINIA SOLID WASTE MANAGEMENT BOARD
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PROJECT 95-569-01

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I. INTRODUCTION

The generation of municipal solid waste (MSW) in the United States (U.S.) has historically been ever increasing. According to the U.S. Environmental Protection Agency (EPA), the average annual growth rate of MSW generation from the time period of 1960 to 1993 has been 2.7 percent in the U.S. The EPA also reports the average annual population growth rate in the U.S. during the same time period to be 1.1 percent. Therefore, without controlling the generation rate of MSW as the population increases, the quantity of MSW will become paramount thus creating a waste management crisis in the U.S. Source reduction and material recovery have been proposed to control MSW generation. Source reduction includes methods of product reuse, product redesign including material substitution, and modification of manufacturing procedures to reduce the quantity of waste produced. Material recovery includes methods of recycling, composting, and incineration to retrieve materials or energy from waste produced. Both generation control methods work to minimize the quantity of MSW disposed in landfills.

On October 18, 1991, the West Virginia Legislature passed Senate Bill No. 18 which established under Chapter 20, Article 11, Section 5 of the Code of West Virginia, 1931, as amended, the development and implementation of mandatory municipal recycling programs by October 18, 1993. As part of this program, each municipality with a population of 10,000 people or more, was mandated by October 18, 1992 to develop a recycling program that included:

- an ordinance that requires recycling within the municipality,
- a set day at least once per month when recycled materials will be collected,
- a system for that collection,
- provisions within the ordinance to insure compliance, and
- a comprehensive public information educational program.

Also, it was required that the municipality consult with the county or regional solid waste authority to insure that coordination of solid waste programs were maximized.

Based on the above information, the Solid Waste Management Board of West Virginia (SWMB) has taken a pro-active stand toward minimizing the quantity of MSW disposed in landfills and funded this study to obtain waste characterization data for the State of West Virginia waste stream. The data is to be utilized by municipalities, county governments, and communities to develop and implement mandatory and/or voluntary source reduction and material recovery programs. The SWMB retained the services of GAI Consultants, Inc. (GAI) to perform a solid waste characterization study for urban and rural areas within West Virginia.

This report presents the methodology, results, and findings of the waste characterization study performed by GAI. The methodology for conducting this waste characterization study was a source-specific approach in which the individual components of the waste stream were sampled, sorted, and weighed. GAI 's approach for this study was to review existing waste stream data, collect data, and develop fundamental results on the quantity and classification of the components in the solid waste stream in rural and urban areas of West Virginia. The intent of this characterization study was to determine waste stream components in rural and urban areas of West Virginia, to identify potential recoverable materials, to evaluate the effects of seasonal variation on the waste stream, and estimate per capita generation of MSW. The scope of work for this waste characterization study included: review of existing waste characterization data, field sampling and sorting of MSW, analysis of field data, estimation of per capita generation, report submittal, and presentation of results to the SWMB.

II. MATERIALS, METHODS, AND FIELD PROGRAM

GAI developed a work plan document to govern implementation of the waste characterization activities. The work plan outlined GAI's technical approach for waste characterization and data evaluation. The work plan details are presented in the following sections.

A. Study Area Selection

Waste stream samples that are representative of the study area (wasteshed) were required to characterize the waste stream. Waste stream sampling was determined to be most effective if completed at a landfill within the wasteshed to be studied. Sampling at the landfill allowed for a centralized location for waste disposal within the study wasteshed, ease of sample disposal, adequate sorting area, and ease in determination of waste sample origin and type (residential, commercial, etc.).

All landfills to be sampled, regardless of wasteshed, were to have similar characteristics to reduce the number of variables that influence the waste characterization data. The desired variable between the landfills to be sampled was the population density (rural versus urban). The similar landfill characteristics sought for this study were a permit capacity of 9,999 tons per month and receipt of less than five (5) percent out of wasteshed waste.

The population densities of wastesheds were evaluated to determine if they could be classified as urban or rural in nature. Wasteshed H has a population density of 112.7 people per square mile based on the United States Census Bureau's *1990 Census* (1990 Census). Wasteshed F has a population density of 25.5 people per square mile based on the 1990 Census. Also, Wasteshed H encompasses many larger population centers, such as Charleston and Huntington, than does Wasteshed F. Therefore, based on this information GAI deemed Wasteshed H to be an urban wasteshed and Wasteshed F a rural wasteshed. These two wastesheds were selected to be representative of rural and urban wastesheds for this characterization study. Throughout this report,

the urban wasteshed will be referred to as Wasteshed H and the rural wasteshed will be referred to as Wasteshed F. Areas included in the wastesheds are presented in Figure 1.

The quantity of waste disposed at each of the landfills within Wastesheds F and H were evaluated prior to selecting sampling sites to be used in GAI's characterization study. The *1994 Solid Waste Update* by the West Virginia Bureau of Environment, Division of Environmental Protection (WVDEP) was reviewed to determine the potential sites to be selected. The report indicated that there were four active landfills in Wasteshed F. Of these four landfills, only the Nicholas County Landfill and the Greenbrier County Landfill had a permitting capacity of 9,999 tons per month. The waste generated from out of the wasteshed in 1994 at these two landfills was two (2) percent and five (5) percent, respectively. Therefore, Nicholas County Landfill and Greenbrier County Landfill were the sites selected in Wasteshed F to represent the rural areas. In Wasteshed H, four landfills were active and each had permitted capacities of 9,999 tons per month. The two landfills with lowest out of wasteshed waste for 1994 were the City of Charleston Landfill (Kanawha County) and the Disposal Services, Inc. Landfill (Putnam County) which were 0 percent and 6 percent, respectively. Therefore, the City of Charleston Landfill and Disposal Services, Inc. Landfill were the sites selected in Wasteshed H to represent the urban areas. The general location of the landfills in this study are shown on Figure 1.

B. Preliminary Analyses

GAI reviewed data collected during previous waste characterization efforts. Previous characterization studies reviewed by GAI are incorporated in the List of References and Sources of Information. The previous studies were reviewed for waste characterization determinations and methodologies to enhance GAI's study by learning from past successes and shortcomings. Review of existing data provided information that was utilized in a number of manners in GAI's study. The first was to compare GAI's results with existing data and evaluate if the information being collected was comparable to the past data. The use of historical data in this manner provided an indication that past and/or present sampling methodologies may have been flawed or that waste disposal trends may have changed. Historical information may be used to show and evaluate historical trends in

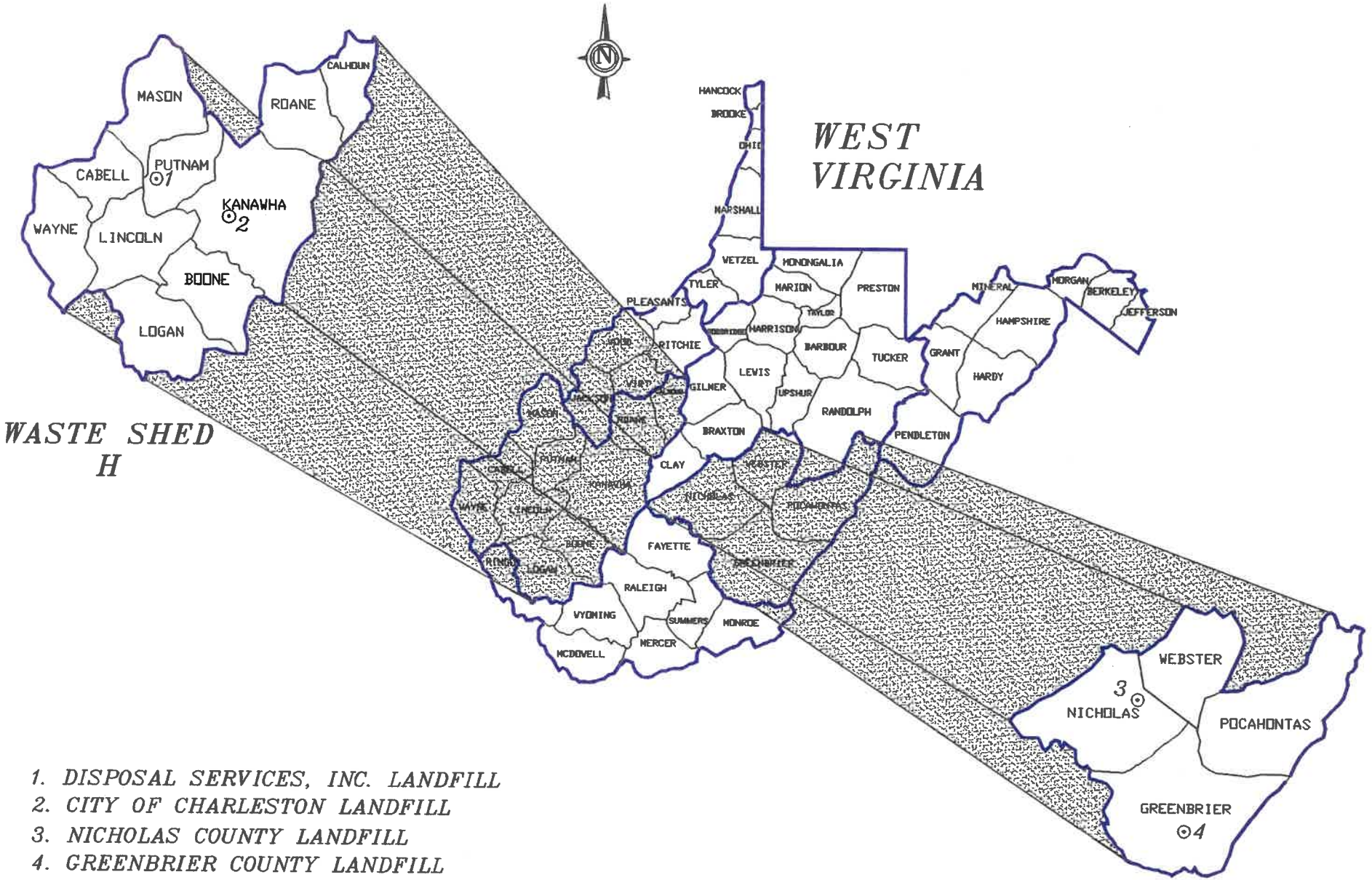
waste disposal due to changes in human lifestyles, attitudes, and/or solid waste regulations. Evaluation of trends in MSW generation were beyond the scope of this study. No attempt was made or implied by GAI to such MSW generation trends during this study.

C. Field Waste Characterization

Sampling and characterization of solid waste was performed during both winter (April 1996) and summer (July 1996) to help evaluate the seasonal variation of the waste streams. The field staff were trained in the characterization of the solid waste sampling methods and safety procedures prior to beginning field sampling. The training included emphasis on the accuracy and consistency in the collection of the data and was geared toward the specified methodologies in this study. Additionally, the field operations manager (FOM) received training to familiarize him with the categories of waste generators, truck types, and equipment utilized during field activities to aid in interview activities. The FOM was the person overseeing field activities and assuring the activities were being completed as required by the work plan. The FOM participated in all field activities including sampling and characterization of MSW. Field characterization activities were completed utilizing two (2) engineers and two (2) technicians.

The driver of each disposal truck sampled was interviewed. Some drivers were interviewed without a sample being collected. This generally occurred when the type of generator or location of waste generation was outside the desired study parameters. The format of the interview form is presented in Figure 2. The interview consisted of determining the origin of the waste, whether it was from single-family residence, multi-family residence, or commercial/institutional sources, and whether the waste was generated within the wasteshed. Only waste generated in West Virginia from residential and commercial sources was sampled and sorted. The type of disposal vehicle was recorded. The net load weight of the disposal vehicle was obtained from the driver during the interview or from the landfill scale master. Completed driver interview forms are presented in Appendix A.

FIGURE 1 – WASTESHEDS IN WEST VIRGINIA



1. DISPOSAL SERVICES, INC. LANDFILL
2. CITY OF CHARLESTON LANDFILL
3. NICHOLAS COUNTY LANDFILL
4. GREENBRIER COUNTY LANDFILL

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FIGURE 2
INTERVIEW FORM

PROJECT NAME _____
PROJECT NUMBER _____
LANDFILL _____

INTERVIEWER _____ DATE and TIME _____
REVIEWED BY _____ DATE and TIME _____

SAMPLE NUMBER _____ WASTESHED _____

COMPANY _____
TYPE OF TRUCK _____
TRUCK CAPACITY _____

WASTE ORIGIN
County _____
Town _____
Other _____

TYPE OF WASTE
Single family residence _____
Multi-family residence _____
Commercial/Institutional _____

Is there a recycling program that exists in the area of route _____
If so what materials are recycled _____

ADDITIONAL INFORMATION

_____
_____
_____
_____
_____
_____
_____
_____
_____

NOTES:

_____
_____
_____
_____
_____
_____
_____
_____

One day in each season, approximately 200 to 300 pounds of waste were randomly collected at the specific landfill from four to six trucks as they unloaded. The solid waste was in a pile as it was being emptied from the truck. The samples were collected from the perimeter sides and top of each load to attempt to provide a random sample and to reduce the potential of sample bias. This sampling method allowed for samples to be obtained from the entire length of the collection route. The samples collected were then transported to the sorting area. A portable shelter to offer protection from the elements during the sorting operations and to prevent the wind from blowing away the lighter materials was available. The aggregate sample was weighed to determine the in-bag weight of the sample prior to sorting. Sorting was performed on a sorting table. The sorting table had a wire screen bottom with one (1) inch square openings and was placed over a plastic sheet. This allowed for the "fines" and "supermix" materials to fall through onto the plastic. Materials categorized as "Fines and Supermix" were any items without respect to their material composition that passed the one (1) inch square screen during sorting activities. The "fines" and "supermix" were combined and weighed. The remaining materials on the screen table were hand sorted into the categories as listed below:

- Paper
  - Newspaper
  - Magazine
  - Corrugated
  - Other paperboards
  - Books
  - Office Paper
  - Other (Shredded, etc.)
- Organics
  - Food
  - Disposable Diapers
  - Yard & Garden Waste
- Plastics
  - PET
  - HDPE
  - Commercial Plastics
  - Other - Rigid
  - Other - Flexible
  - Styrofoam
- Textiles
- Glass

- Metals
  - Aluminum Cans
  - Bimetal Cans
  - Ferrous/Tinned Cans
  - Other Ferrous Metal
    - ie. Appliances
  - Other Non Ferrous Metal
- Rubber
- Rubble
  - Asphalt
  - Concrete/brick/rock
  - Other
- Wood
  - Pallets
  - Lumber
  - Other
- Miscellaneous and Fines
  - Contaminated Soil
  - Fines and Supermix
- Oversized Items

Upon completion of material segregation, each category of constituents was weighed. A platform scale with a minimum capacity of 50 pounds capable of reading accurately to a tenth of a pound and a field balance with a minimum capacity range of 2 to 10 pounds capable of reading to a tenth of a pound were utilized to weigh the different categories of waste. The scales were checked for calibration prior to each days sampling by zeroing the scale and determining the weight of objects with known weights. Two of each type of scale were available for use if a problem with a scale occurred in the field. Data collection forms for each sample were used to document the quantity by weight of each category of the segregated waste. The format of the data collection form is presented in Figure 3. Completed sampling forms are included in Appendix B.

FIGURE 3
SAMPLING FORM

PROJECT NAME _____
PROJECT NUMBER _____
LANDFILL _____

SAMPLE NUMBER _____ SAMPLE WEIGHT _____ LBS.
SAMPLER _____ DATE and TIME _____
CHECKED BY _____ DATE and TIME _____

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER		
MAGAZINES		
CORRUGATED		
OTHER PAPERBOARDS		
BOOKS		
OFFICE PAPER		
OTHER		
TOTAL PAPER		
ORGANICS		
FOOD		
DISPOSABLE DIAPERS		
YARD & GARDEN WASTE		
TOTAL ORGANICS		
PLASTICS		
PET		
HDPE		
COMMERCIAL PLASTICS		
OTHER - RIGID		
OTHER - FLEXIBLE		
STYROFOAM		
TOTAL PLASTICS		
TEXTILES		
GLASS		
METALS		
ALUMINUM CANS		
BI-METAL CANS		
FERROUS/TINNED CANS		
OTHER FERROUS		
OTHER NON-FERROUS		
TOTAL METALS		

Notes:

FIGURE 3
SAMPLING FORM

PROJECT NAME _____
PROJECT NUMBER _____
LANDFILL _____

SAMPLE NUMBER _____ SAMPLE WEIGHT _____ LBS.
SAMPLER _____ DATE and TIME _____
CHECKED BY _____ DATE and TIME _____

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
RUBBER		
CONSTRUCTION RUBBLE		
ASPHALT		
CONCRETE/BRICK/BLOCK		
OTHER		
TOTAL RUBBLE		
WOOD PRODUCTS		
PALLETS		
LUMBER		
OTHER		
TOTAL WOOD		
MISCELLANEOUS & FINES		
CONTAMINATED SOIL		
FINES & SUPERMIX		
TOTAL OTHER AND FINES		
OVERSIZED ITEMS		
TOTAL SAMPLE WEIGHT		
Notes:		

Following sorting completion, recyclable materials were separated and placed or held for transfer to an appropriate recycling facility if the specific landfill currently operated a recycling service, and the remaining waste was disposed in the landfill. Prior to sample disposal, the sampling form and sample were reviewed and checked by the FOM to ensure materials were classified properly, no materials were missed or erroneously recorded, and all categories roughly equaled the estimated total sample weight. The driver interview form was also reviewed prior to the truck leaving the site.

Other quality control measures performed by field personnel consisted of daily verification of scale calibration, separately weighing all of the samples by two different field personnel, and comparison of results with variations being resolved prior to finalizing the data collection forms. Two field personnel reviewed and signed the forms denoting the forms were checked, and they were in agreement with the data.

A pictorial of the field sampling and waste characterization process used during this study is presented in Appendix C.

D. Health and Safety Plan

To assure the health and safety of GAI employees, the project Health and Safety Plan (HASP) was prepared to address the specific hazards and conditions present or anticipated during field work required for this project. The HASP included requirements and procedures for employee health and safety training, safe work practices and procedures, safe access and egress from the site, requirements for personal protective equipment (PPE), such as disposable coveralls, gloves, boots, respirators, etc., requirements for air monitoring, procedures for emergency response and accessing local emergency medical services. It was the intent of the HASP to aid in the protection of GAI employees and contract personnel from unnecessary exposures to harmful substances, to provide safe working conditions, and to ensure compliance with federal, state, and local regulations.

The plan was prepared in accordance with the regulatory requirements of 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response. It specifically addressed those activities associated with this Waste Characterization Study at various locations within West Virginia.

During development of the plan, consideration was given to current safety standards, as defined by EPA/OSHA/NIOSH, health effects and standards for known contaminants, and procedures designed to account for the potential exposure to unknown substances. Specifically, the following reference sources have been consulted:

- OSHA 29 CFR 1910.120 and EPA 40 CFR 311
- U.S. EPA, OERR ERT Standard Operating Safety Guidelines
- OHSA/NIOSH/EPA/USCG Occupational Health and Safety Guidelines
- NIOSH Pocket Guide to Chemical Hazards

Specifically included in the plan were health and safety responsibilities, standard operating procedures, levels of protection, monitoring requirements, Contingency Plan, and emergency notification requirements associated with the tasks involved in the reference project. The content of the plan was subject to change or revision based upon additional information made available to health and safety personnel or project management involving soil or groundwater characterization and/or changes in the original scope of work that may have occurred subsequent to the preparation of the HASP.

The FOM ensured that the requirements of the HASP were followed during field activities. As an additional insurance that field work would be conducted safely, the FOM had up-to-date training and certification as a Hazardous Waste Workers, as well as current First Aid and CPR certification. Further, all field personnel were trained in the requirements of the HASP prior to the start of field activities.

GAI's director of Health and Safety, a Certified Industrial Hygienist and Certified Safety Professional, directed and reviewed the project's HASP, directed field training as required by the HASP, assisted the project manager in enforcing and auditing staff compliance with the HASP, and was available for consultation on any specific health and safety aspects which may have arisen during the project.

III. RESULTS AND ANALYSIS

A. Sample Weight and Type Generator

During the waste stream characterization study, approximately 2,138 pounds of MSW were sorted. In Wasteshed F, approximately 599 pounds and 412 pounds of MSW were sorted in April 1996 and July 1996, respectively. In Wasteshed H, approximately 630 pounds and 497 pounds of MSW were sorted in April 1996 and July 1996, respectively. The detailed weights of each sample during the period at each landfill are presented on the waste characterization sampling forms in Appendix B. The quantity of MSW disposed at the landfills during the months of this study is presented in Tables 1 and 2. MSW samples were generally collected in the bag as they were unloaded at the landfills. The average weight per bag sampled for both Wastesheds F and H was 9.9 pounds per bag.

During the months in which sampling was conducted, the percent out of shed waste at each landfill was below five (5) percent except at Nicholas County Landfill during April as shown on Table 1. This observation was only evident in the total waste received at the landfill in April. The percent out of shed waste for residential and commercial waste was below five percent. Therefore, the out of shed waste received at Nicholas County in April was most likely an atypical occurrence (ie. sewage sludge, flood cleanup waste, etc.) and more than likely the recyclability of the waste would have been questionable.

An attempt to estimate the percent generation of residential and commercial sources of MSW that contributed to the total MSW stream was made by GAI. However, due to the inconsistent reporting by landfill operators of the source of tonnages landfilled this could not be completed. Inconsistent reporting on Monthly Tonnage Reports could be resolved by providing guidance to landfill operators as to the proper classification of waste (residential, commercial, etc.). The EPA

TABLE 1
TONS OF MSW DISPOSED DURING APRIL CHARACTERIZATION STUDY

	Wasteshed F (Rural)		Wasteshed H (Urban)	
	Nicholas County	Greenbrier County	City of Charleston	Disposal Services
Residential				
In-shed	116.0	115.0	3,677.4	3,620.4
Total	121.0	139.8	3,677.4	3,620.4
% out of shed	4.1	1.8	0.0	0.0
Commercial				
In-shed	1,095.0	1,856.7	7,408.7	6,904.1
Total	1,150.0	1,875.6	7,408.7	6,904.1
% out of shed	4.8	1.0	0.0	0.0
Total				
In-shed	1,353.2	2,881.6	13,191.2	11,153.5
Total	1,454.9	2,928.7	13,226.7	11,153.2
% out of shed	7.0	1.6	0.3	0.0

Note: Total tons includes other MSW such as sewage sludge, construction and demolition waste contaminated soil, etc.

Source: West Virginia Division of Environmental Protection, Office of Public Information. Tonnage Reports.

TABLE 2
TONS OF MSW DISPOSED DURING JULY CHARACTERIZATION STUDY

	Waste Shed F (Rural)		Waste Shed H (Urban)	
	Nicholas County	Greenbrier County	City of Charleston	Disposal Services
Residential				
In-shed	123.0	112.2	3,918.7	2,441.5
Total	129.0	132.9	3,918.7	2,441.5
% out of shed	4.7	15.5	0.0	0.0
Commercial				
In-shed	1,406.0	2,327.8	9,431.4	7,980.0
Total	1,415.0	2,388.9	9,500.4	7,980.0
% out of shed	0.6	2.6	0.7	0.0
Total				
In-shed	1,706.8	2,820.6	15,887.6	23,782.2
Total	1,723.8	2,913.4	15,975.4	23,782.2
% out of shed	1.0	3.2	0.5	0.0

Note: Total tons includes other MSW such as sewage sludge, construction and demolition waste contaminated soil, etc.

Source: West Virginia Division of Environmental Protection, Office of Public Information, Tonnage Reports.

estimates, in *Characterization of Municipal Solid Waste in the United States: 1994 Update*; residential wastes (including waste from multi-family dwellings) to be 55 to 65 percent of the total waste generation, with commercial wastes ranging between 35 to 45 percent of the total waste generation. The EPA study states that local and regional factor such as climate and level of commercial activity contribute to variations. In another study performed by GAI, information provided by the Raleigh County Solid Waste Authority, indicated that in Raleigh County, West Virginia approximately 47% of MSW generated was from residential sources while 53% was commercially generated.

B. Waste Characterization

Upon completion of field waste characterization activities, the data collected was reduced to allow analysis and evaluation of the data relative to the waste characterization study. Tables 3 and 4 present the average percent by total weight of each component of the waste stream results for winter, summer, and total for each landfill as well as the total for rural and urban wastesheds, respectively. The total percentage presented is an average for the winter and summer data. The results reflect "as sorted" data without an adjustment for the moisture content of the waste.

A direct comparison, using the general classification categories delineated in this study (paper, organics, plastics, textiles, glass, metals, rubber, construction rubble, wood products, miscellaneous and fines, and oversized), of the average total percent of each component by total weight for the waste stream in Wastesheds F and H is presented in Table 5. Figure 4 presents a graphical representation of the data in Table 5. From Table 5, the material making up the largest majority of the waste stream is paper for both Wastesheds F and H. Paper makes up approximately 35 to 45 percent of the waste stream in Wastesheds F and H, respectively. Figures 5 through 8 graphically present the composition of the total waste stream sampled at each landfill during the winter and summer sampling periods.

TABLE 3
WASTE STREAM CHARACTERIZATION SAMPLING FORM
WASTESHED F (RURAL)

CATEGORIES	PERCENT TOTAL WEIGHT NICHOLAS COUNTY			PERCENT TOTAL WEIGHT GREENBRIER COUNTY			PERCENT TOTAL WEIGHT WASTESHED F
	WINTER	SUMMER	TOTAL	WINTER	SUMMER	TOTAL	TOTAL
PAPER							
NEWSPAPER	4.9	0.0	3.4	3.9	0.0	2.0	2.6
MAGAZINES	0.0	0.0	0.0	0.9	0.0	0.5	0.3
CORRUGATED	7.3	2.8	5.9	5.0	2.1	3.6	4.6
OTHER PAPERBOARDS	7.4	18.3	10.8	10.2	10.2	10.2	10.4
BOOKS	0.0	0.0	0.0	3.0	0.0	1.6	0.9
OFFICE PAPER	0.0	0.0	0.0	1.2	6.8	4.3	2.3
OTHER	11.5	18.0	13.5	9.4	17.9	13.4	13.5
TOTAL PAPER	31.1	39.2	33.6	33.7	37.1	35.3	34.6
ORGANICS							
FOOD	23.4	5.7	17.9	7.9	18.3	12.9	14.9
DISPOSABLE DIAPERS	0.0	1.1	0.3	0.4	0.1	0.2	0.3
YARD & GARDEN WASTE	0.0	0.0	0.0	3.0	0.0	1.6	0.9
TOTAL ORGANICS	23.4	6.8	18.3	11.3	18.4	14.7	16.1
PLASTICS							
PET	10.9	15.1	12.2	5.9	8.9	7.3	9.3
HDPE	3.1	7.0	4.3	10.7	4.0	7.5	6.2
COMMERCIAL PLASTICS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER - RIGID	0.0	0.0	0.0	0.2	1.1	0.6	0.3
OTHER - FLEXIBLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
STYROFOAM	0.6	1.0	0.7	0.2	1.2	0.6	0.7
TOTAL PLASTICS	14.6	23.1	17.2	16.9	15.1	16.1	16.5
TEXTILES	3.2	11.0	5.6	8.3	6.9	7.6	6.8
GLASS	7.2	4.6	6.4	6.1	6.1	6.1	6.2
METALS							
ALUMINUM CANS	1.5	2.3	1.8	3.5	1.5	2.5	2.2
BI-METAL CANS	5.8	3.4	5.1	5.4	5.9	5.6	5.4
FERROUS/TINNED CANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER FERROUS	0.0	0.0	0.0	4.1	0.1	2.2	1.3
OTHER NON-FERROUS	1.2	0.0	0.9	0.0	0.0	0.0	0.4
TOTAL METALS	8.6	5.8	7.7	13.0	7.4	10.3	9.3
RUBBER	4.5	0.0	3.1	0.0	0.2	0.1	1.3
CONSTRUCTION RUBBLE							
ASPHALT	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONCRETE/BRICK/BLOCK	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	0.0	0.0	1.7	0.0	0.9	0.5
TOTAL RUBBLE	0.0	0.0	0.0	1.7	0.0	0.9	0.5
WOOD PRODUCTS							
PALLETS	1.3	0.0	9.3	0.0	0.0	0.0	0.4
LUMBER	0.0	0.0	0.0	1.6	0.0	0.9	0.5
OTHER	0.5	0.1	0.4	0.0	0.0	0.0	0.2
TOTAL WOOD	1.9	0.1	1.3	1.6	0.0	0.9	1.0
MISCELLANEOUS & FINES							
CONTAMINATED SOIL	0.0	0.0	0.0	0.0	2.3	1.1	0.7
FINES & SUPERMIX	4.1	21.3	9.4	4.7	4.5	4.6	6.6
TOTAL OTHER AND FINES	4.1	21.3	9.4	4.7	6.8	5.7	7.3
OVERSIZED ITEMS	0.9	0.0	0.6	0.0	0.0	0.0	0.3

NOTE: Percent total weight is based on the total in-bag weight of sample.

TABLE 4
WASTE STREAM CHARACTERIZATION SAMPLING FORM
WASTESHED H (URBAN)

CATEGORIES	PERCENT TOTAL WEIGHT CHARLESTON			PERCENT TOTAL WEIGHT DISPOSAL SERVICES			PERCENT TOTAL WEIGHT WASTESHED H
	WINTER	SUMMER	TOTAL	WINTER	SUMMER	TOTAL	TOTAL
PAPER							
NEWSPAPER	2.5	0.0	1.2	11.0	0.0	6.7	4.6
MAGAZINES	0.0	0.0	0.0	8.0	0.0	4.8	3.0
CORRUGATED	2.0	2.5	2.3	1.8	1.6	1.7	1.9
OTHER PAPERBOARDS	9.3	4.4	6.7	7.3	10.1	8.4	7.8
BOOKS	0.0	0.0	0.0	1.0	0.0	0.6	0.4
OFFICE PAPER	0.0	2.9	1.5	8.6	3.9	6.7	4.7
OTHER	30.9	21.2	25.9	16.5	28.6	21.3	23.0
TOTAL PAPER	44.7	31.0	37.6	54.2	44.1	50.2	45.4
ORGANICS							
FOOD	7.0	17.1	12.2	3.2	9.6	5.7	8.2
DISPOSABLE DIAPERS	1.0	4.2	2.6	1.0	2.6	1.6	2.0
YARD & GARDEN WASTE	0.0	9.4	4.8	10.8	3.3	7.8	6.7
TOTAL ORGANICS	8.0	30.7	19.7	15.1	15.4	15.2	16.9
PLASTICS							
PET	7.8	6.9	7.4	8.2	14.1	10.5	9.3
HDPE	3.9	1.6	2.7	3.6	1.7	2.8	2.8
COMMERCIAL PLASTICS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER - RIGID	0.3	8.5	4.5	1.6	0.0	1.0	2.3
OTHER - FLEXIBLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
STYROFOAM	1.3	1.1	1.2	0.8	0.7	0.7	0.9
TOTAL PLASTICS	13.4	18.1	15.8	14.1	16.5	15.1	15.4
TEXTILES	4.9	1.1	2.9	1.0	5.4	2.7	2.8
GLASS	13.3	7.9	10.6	5.1	7.5	6.0	7.8
METALS							
ALUMINUM CANS	2.3	2.2	2.3	1.9	2.4	2.1	2.2
BI-METAL CANS	2.7	2.0	2.3	3.1	3.1	3.1	2.8
FERROUS/TINNED CANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER FERROUS	0.0	0.0	0.0	0.0	0.6	0.2	0.1
OTHER NON-FERROUS	0.0	0.9	0.4	0.1	0.0	0.1	0.2
TOTAL METALS	5.0	5.0	5.0	5.0	6.2	5.5	5.3
RUBBER	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONSTRUCTION RUBBLE							
ASPHALT	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONCRETE/BRICK/BLOCK	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL RUBBLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WOOD PRODUCTS							
PALLETS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LUMBER	0.0	0.0	0.0	0.0	0.2	0.1	0.0
OTHER	0.0	0.0	0.0	0.0	0.4	0.2	0.1
TOTAL WOOD	0.0	0.0	0.0	0.0	0.6	0.2	0.1
MISCELLANEOUS & FINES							
CONTAMINATED SOIL	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FINES & SUPERMIX	10.5	2.1	6.2	5.9	3.5	5.0	5.4
TOTAL OTHER AND FINES	10.5	2.1	6.2	5.9	3.5	5.0	5.4
OVERSIZED ITEMS	0.0	0.0	0.0	0.0	0.6	0.2	0.1

NOTE: Percent total weight is based on the in-bag weight of sample.

TABLE 5
AVERAGE PERCENT TOTAL WEIGHT OF
CHARACTERIZATION CATEGORIES BY WASTESHED

	Wasteshed F (Rural)	Wasteshed H (Urban)
Paper	34.6	45.4
Organic	16.1	16.9
Plastics	16.5	15.4
Textiles	6.8	2.8
Glass	6.2	7.8
Metals	9.3	5.3
Rubber	1.3	0.0
Construction Rubble	0.5	0.0
Wood Products	1.0	0.1
Miscellaneous Fines	7.3	5.4
Oversized Items	0.3	0.1

Note: Percentages presented may not equal 100% due to sample loss and/or absorption of moisture during sorting.

FIGURE 4
WASTESHED F vs. WASTESHED H
AVERAGE PERCENTAGE TOTAL WEIGHT
CHARACTERIZATION CATEGORIES

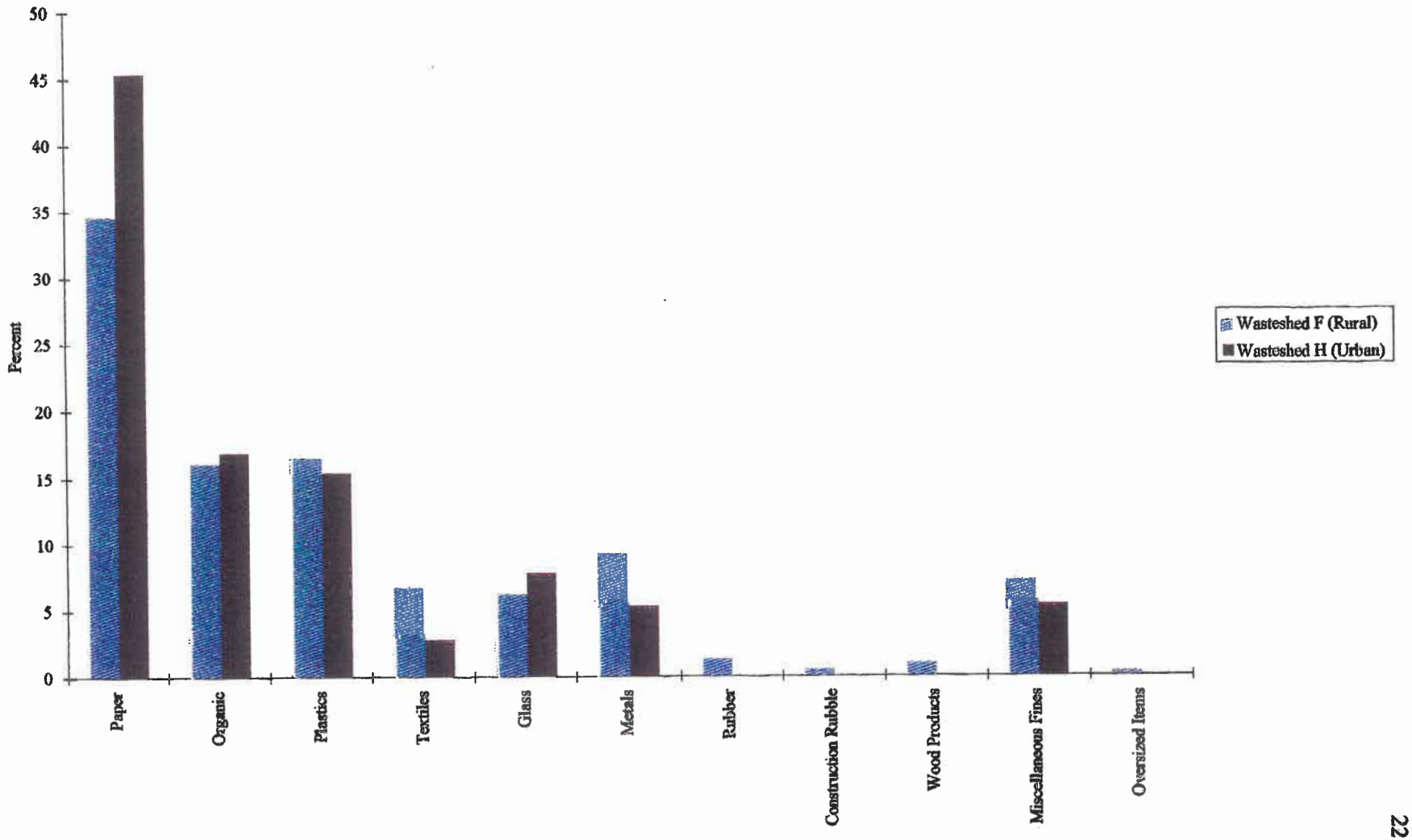
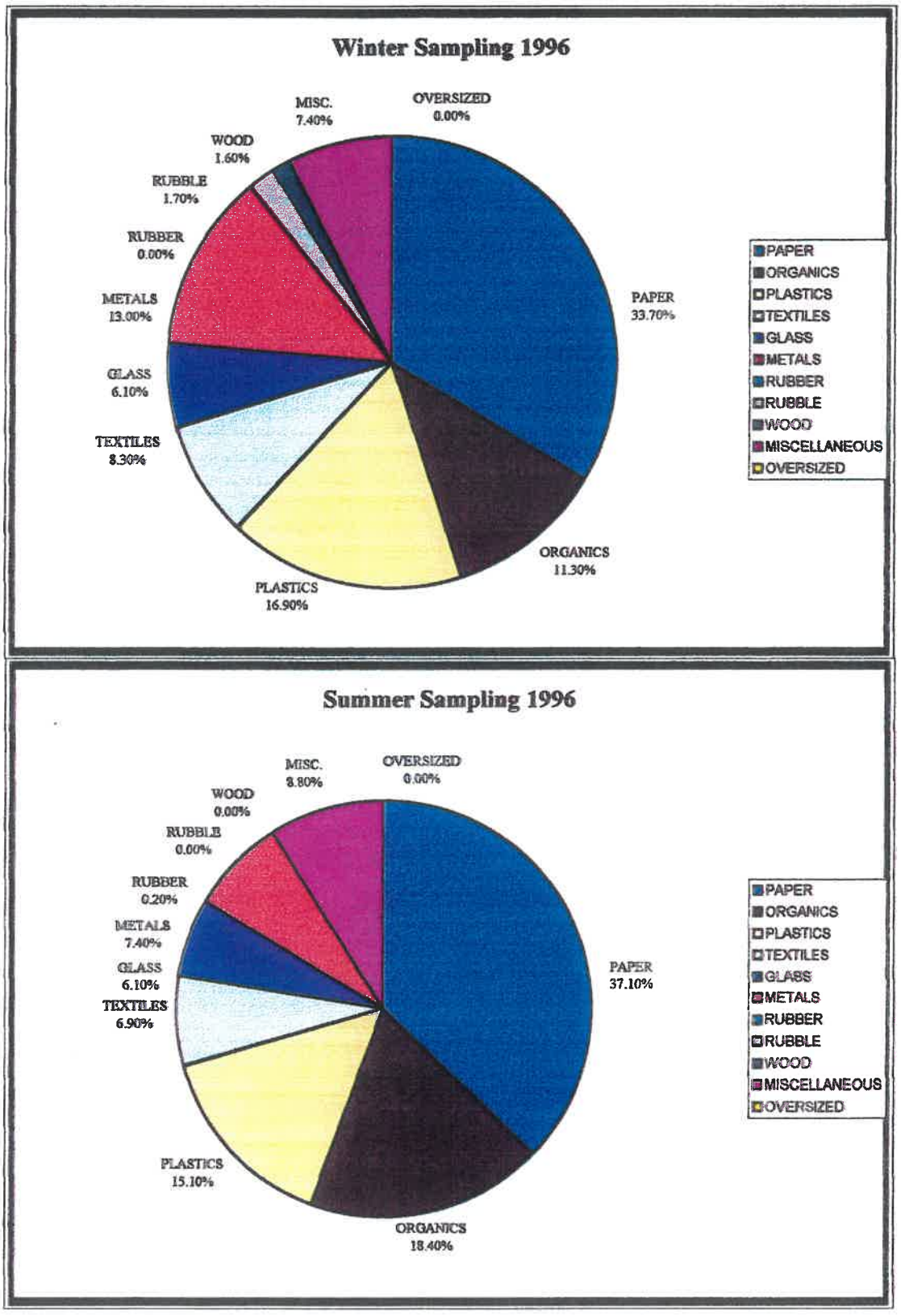
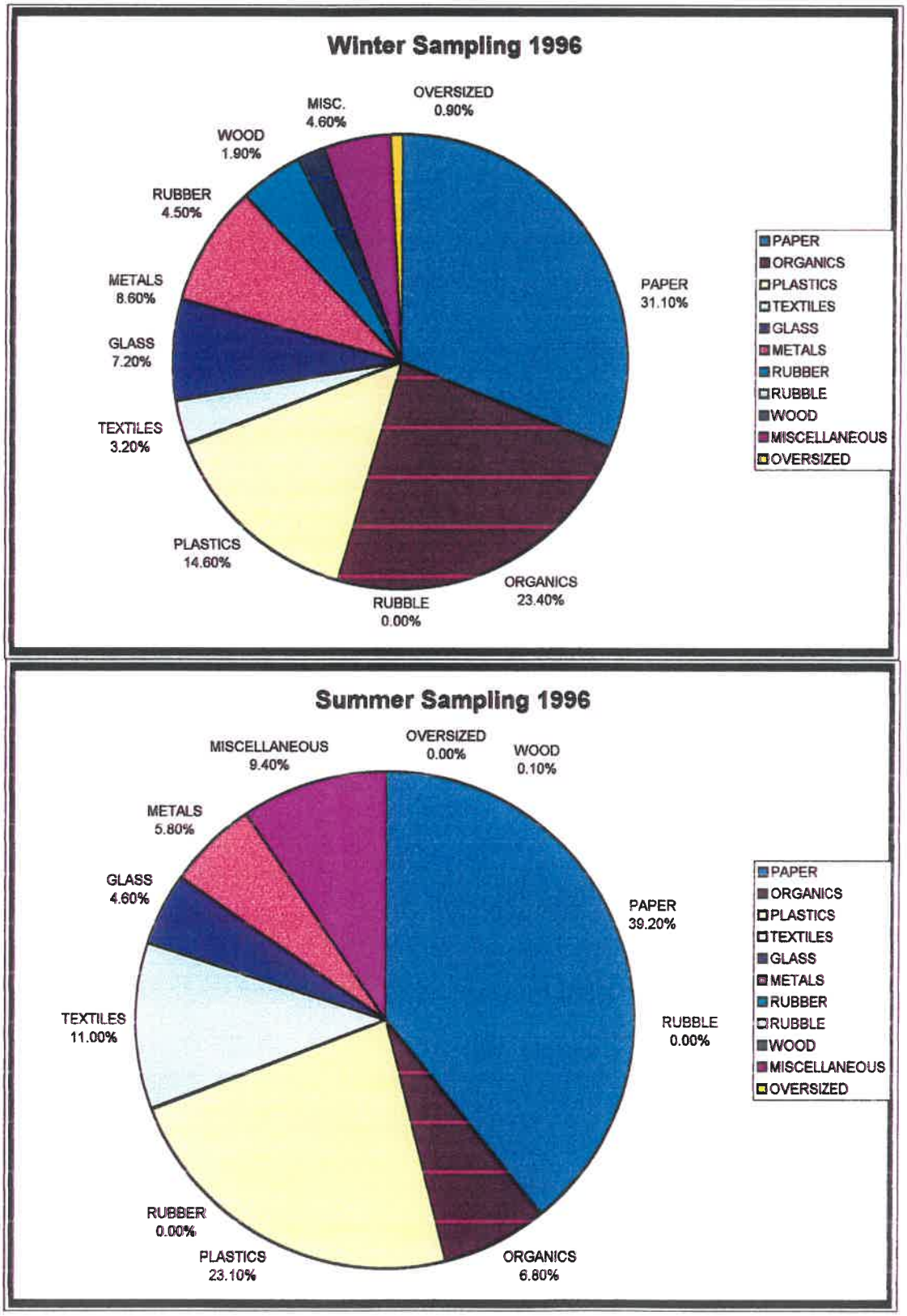


FIGURE 5
GREENBRIER CO. LANDFILL
WASTE STREAM COMPOSITION



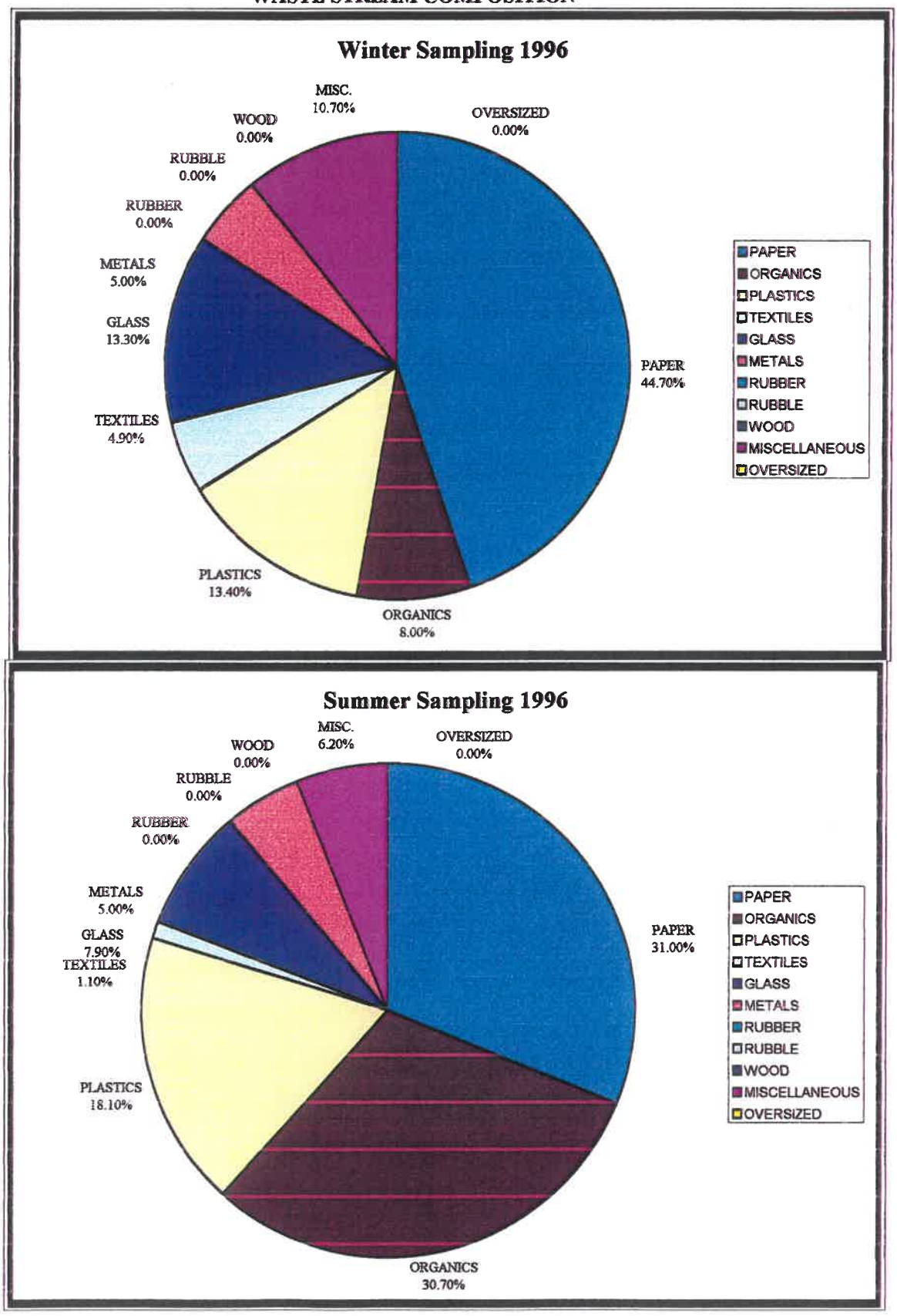
Note: Miscellaneous includes any addition or loss of weight in sampling to allow the chart to equal 100 percent.

FIGURE 6
NICHOLAS CO. LANDFILL
WASTE STREAM COMPOSITION



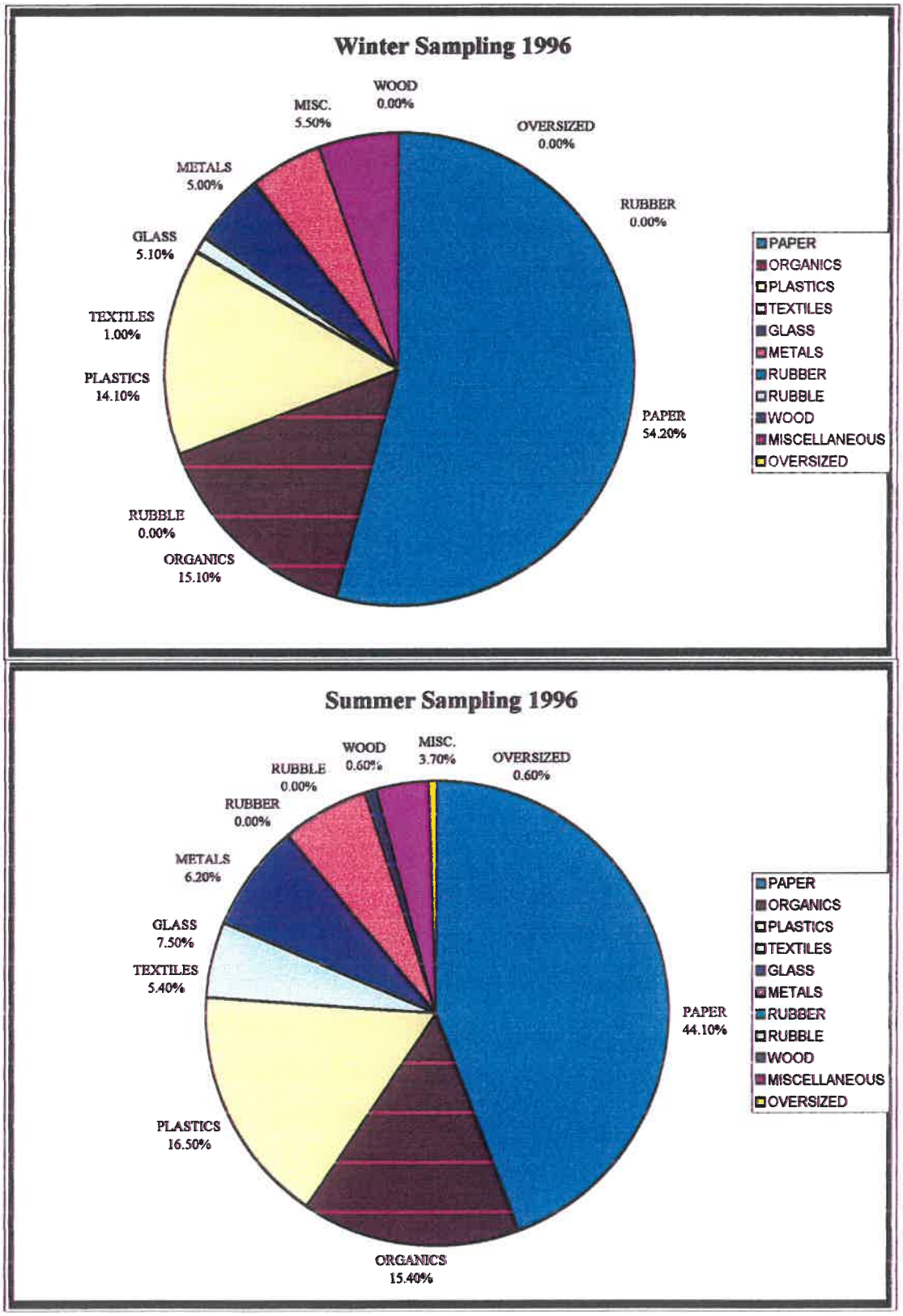
Note: Miscellaneous includes any addtion or loss of weight in sampling to allow the chart to equal 100 percent.

FIGURE 7
CHARLESTON LANDFILL
WASTE STREAM COMPOSITION



Note: Miscellaneous includes any addtion or loss of weight in sampling to allow the chart to equal 100 percent.

FIGURE 8
DISPOSAL SERVICES LANDFILL
WASTE STREAM COMPOSITION



Note: Miscellaneous includes any addtion or loss of weight in sampling to allow the chart to equal 100 percent.

C. Recycling

1. Paper

The paper category was subdivided into seven (7) subcategories: newspaper, magazines, corrugated, other paperboard, books, office paper, and other. In GAI's study, the "other" paper subcategory makes up the largest percentage of paper by weight, as shown in Tables 3 and 4. The "other" paper subcategory generally contained discarded mail, tissue and paper towels, paper plates and cups, brown paper bags, wrapping papers, and other paper packaging. The recyclability of the materials in the "other" paper subcategory is questionable due to the lower grade of the papers in the category and their contamination with organics as observed during sampling activities.

"Other" paper accounted for 13.5 percent of the total paper in Wasteshed F and for 23.0 percent of the total paper in Wasteshed H. If the remaining subcategories (newspaper, magazines, corrugated, other paperboard, books, and office paper) are recyclable, approximately 21.1 percent of the residential and commercial waste stream in Wasteshed F and 22.4 percent of the residential and commercial waste stream in Wasteshed H was recyclable paper. From Table 6, the subcategories (newspaper, magazines, corrugated, other paperboard, books, and office paper) assumed recyclable account for approximately 92.4 percent of total paper recycled in 1993 as reported by the EPA.

2. Plastics

The plastics category was subdivided into six (6) subcategories: PET, HDPE, commercial plastics, other-rigid, other-flexible, and styrofoam. In GAI's sorting activities, PET, HDPE, and styrofoam made up the majority of plastics sorted. The percent styrofoam by weight was lower than PET and HDPE because of the difference in material densities. The majority of plastics sorted by GAI consisted of packaging containers for food and drinks. The EPA reports that plastic packaging containers make up the majority of recycled plastic. Approximately, 16.0 percent and 13.0 percent based on total weight of the residential and commercial waste stream was composed of recyclable plastic in Wasteshed F and Wasteshed H, respectively.

TABLE 6
PAPER AND PAPERBOARD PRODUCTS IN MSW, 1993
(In thousands of tons and percent of generation)

	Generation	Recovery	
Product Category	**Thousands tons**	**Thousands tons**	**Percent of generation**
Nondurable Goods			
Newspapers			
Newsprint	10,620	4,970	46.8%
Groundwood Inserts	2,320	950	40.9%
Total Newspapers	12,940	5,920	45.7%
Books	990	160	16.2%
Magazines	2,500	450	18.0%
Office Papers	7,120	2,600	36.5%
Telephone Books	740	60	8.1%
Third Class Mail	4,010	540	13.5%
Other Commercial Printing	5,440	1,060	19.5%
Tissue Paper and Towels	3,010	Neg.	Neg.
Paper Plates and Cups	830	Neg.	Neg.
Other Nonpackaging Paper*	4,830	Neg.	Neg.
Total Paper and Paperboard Nondurable Goods	42,410	10,790	25.4%
Containers and Packaging			
Corrugated Boxes	26,350	14,620	55.5%
Milk Cartons	470	Neg.	Neg.
Folding Cartons	4,940	700	14.2%
Other Paperboard	300	Neg.	Neg.
Packaging	2,200	350	15.9%
Bags and Sacks	70	Neg.	Neg.
Wrapping Papers	1,100	Neg.	Neg.
Other Paper Packaging			
Total Paper and Paperboard Containers and Packaging	35,430	15,670	44.2%
Total Paper and Paperboard	77,840	26,460	34.0%

* Includes tissue in disposable diapers, paper in games and novelties, cards, etc.
Neg. = Negligible.
Details may not add to totals due to rounding.
Source: EPA, *Characterization of Municipal Solid Waste in the Unite States:* 1994 Update

3. Metals

The metals category was subdivided into five (5) subcategories: aluminum cans, bi-metal cans, ferrous/tinned cans, other ferrous, and other non-ferrous. During GAI's sorting activities, aluminum and bi-metal cans made up the majority of metals sorted. The majority of cans consisted of packaging containers for food and drinks. From data presented by the EPA, metal containers and packaging make up approximately 46.7 percent of metals recycled with the remaining percentage of metals recycled coming from durable goods (appliances, furniture, tires, lead acid batteries, etc.). Therefore, approximately 7.6 percent and 5.0 percent by total weight of the residential and commercial wastestream was composed of recyclable metals in Wastesheds F and H, respectively.

4. Textiles

The textiles category in GAI's study contained primarily discarded clothing. The EPA found that approximately 6.1 million tons of textiles were generated in 1993. Of the 6.1 million tons generated, the EPA estimates that 11.7 percent of textiles were recovered leaving discards of 5.4 million tons of textiles in 1993. However, the recovered textiles generally reentered the waste stream a second time after reuse. Therefore, recovery of textiles as stated by the EPA was a diversion of materials rather than recycling of a material. Based on this information the recyclability of textiles is considered to be minimal. Reuse (hand-me down clothing, rags, etc.) of textiles should be encouraged prior to disposal to maximize material usage. GAI's data indicates that textiles accounted for 6.2 and 2.8 percent by weight of the residential and commercial waste stream sampled in Wastesheds F and H, respectively.

5. Organics

The organics category was subdivided into three (3) subcategories: food, disposable diapers, and yard and garden waste. In GAI's sorting activities food waste made up the largest percentage of organics sorted in both wastesheds. The percent of food waste in the waste stream was 14.9 and 8.2 in Wastesheds F and H, respectively. Comparing the data, this could indicate the usage of garbage disposals in urban areas is higher than rural areas as one would expect to observe or the use of more prepared foods in homes in Wasteshed H. The EPA states that food wastes for composting

and/or animal feed has been practiced in some locations, but no significant recovery of food wastes were identified in 1993. GAI believes recovery of food wastes are most feasible in areas with industrial or institutional activities related to food preparation. This is the case because the separation of food included in the residential and commercial waste stream could be tedious and not cost effective.

From the data collected by GAI, a difference in the percent by total weight of yard and garden waste was observed for the wastesheds. Wasteshed F contained approximately one percent by total weight of yard and garden waste and Wasteshed H contained approximately 6.7 percent by total weight. This observation appears to indicate that the percent of the wastestream by weight of yard and garden waste was greater in urban areas than in rural areas. This was most likely the case since that in rural areas, the majority of yard and garden wastes are believed to be disposed at non-permitted locations (wooded areas adjacent to homes, etc.) or used for mulch, fertilizer, etc. in the wasteshed. In urban areas, yard and garden wastes are generally collected, bagged, and disposed by individuals as household waste if composting services are not provided/available in the area. The removal of yard and garden wastes in 1993 was estimated to be 19.8 percent of generation by the EPA. This percentage does not account for "backyard" disposal or composting by individuals. The "backyard" disposal and/or composting of yard and garden wastes are believed to be higher in rural areas than urban areas. This could account for the variation in the percent in the waste stream that GAI observed during this study. Therefore, recovery of yard and garden wastes for large scale composting is most likely to benefit urban areas, while organizing public awareness for "backyard" composting is more suited for rural areas.

The percent by weight of disposable diapers in the waste stream was higher in Wasteshed H than in Wasteshed F. The percent of diapers were 0.3 and 2.0 of the waste streams in Wastesheds F and H, respectively. The recovery and recyclability of diapers is believed to be minimal for both wastesheds due to the combination of materials that are incorporated in diapers (plastic, rubber, textiles) as well as separation from MSW would be tedious and not cost effective.

6. Glass

Glass categorized in GAI's study was almost exclusively in the form of packaging containers for food and drinks. From EPA data, glass packaging containers make up the majority of glass recycled. Approximately, 6.2 percent and 7.8 percent in Wastesheds F and H, respectively, based on the total weight of the residential and commercial waste stream sampled was composed of recyclable glass.

7. Others

The recyclability of the other categories delineated by GAI (rubber, construction rubble, wood products, miscellaneous and fines, and oversized items) are considered minimal due to the small quantity of the materials sampled in the MSW stream during this study. Specific products may be recyclable on a regional basis, such as tires and wood, however determination of the generation of such products was outside the scope of this study.

The percent of the residential and commercial waste stream presented as recyclable is the approximate portion believed to be recyclable based on GAI interpretation of the data. This percentage is not an estimate of the recyclable portion of the waste stream that may be expected to be recovered. Recovery of all recyclable materials in the waste stream is probably not feasible. The determination of the recoverable percentage of the total recyclables in the waste stream of each category is beyond the scope of this study. Tables 7 and 8 present the generation and recovery of MSW as reported by the EPA's *Characterization of Municipal Solid Waste in the United States: 1994 Update*. The EPA data on the recoverable portion of recyclables in the waste stream is presented for reference only and no evaluation of the validity of the information in reference to this study has been completed by GAI. Based on Table 8, recovery of a portion of the recyclable fraction of waste generated may be expected, which is generally less than 50 percent of the quantity generated.

D. Seasonal Variation

Although an attempt was made to evaluate the influence of the seasons on the characterization (quantity and composition) of the waste stream, the relatively limited sampling periods and samples collected make any influence of seasonal variation non-discernable. Figures 9 through 19 graphically present the variation in the percentage of each component in the waste stream. The figures present data for each landfill during winter and summer samplings.

E. Per Capita Generation

Generation of MSW by individuals (per capita generation rate) is an important parameter used by solid waste management planners for predicting waste generation and sizing of disposal and resource recovery facilities. However, per capita generation rates (PCG) are not appropriate for design of collection systems. Collection systems are more suited to be designed on a rate of pounds per household per week. During this study, numerous methods to evaluate MSW per capita generation were considered prior to actual analysis being completed. GAI determined that the method to evaluate per capita generation would need to be based on data similar to that of previous studies so that comparisons could be drawn between results. Also, the influence of population density and seasonal variation would need to be accounted for in the analysis. After evaluation of possible methods, one evaluation method that accounted for all analysis criteria could not be determined. Therefore, MSW per capita generation was evaluated by two separate analysis methods.

TABLE 7
MATERIALS GENERATED* IN THE MUNICIPAL SOLID WASTE STREAM, 1960 TO 1993
(In thousands of tons and percent of total generation)

	Thousands of Tons						
Material	**1960**	**1970**	**1980**	**1990**	**1991**	**1992**	**1993**
Paper and Paperboard	29,910	44,180	54,730	72,680	71,100	74,310	77,840
Glass	6,680	12,680	14,950	13,180	12,740	13,140	13,670
Metals							
Ferrous	9,950	12,590	11,580	12,440	12,560	12,880	12,930
Aluminum	360	850	1,760	2,860	2,980	2,910	2,970
Other Nonferrous	150	670	1,120	1,100	1,150	1,160	1,240
Total Metals	*10,460*	*14,110*	*14,460*	*16,400*	*16,690*	*16,950*	*17,140*
Plastics	400	3,060	7,870	16,820	17,230	18,520	19,300
Rubber and Leather	2,030	3,260	4,290	5,930	5,800	6,030	6,220
Textiles	1,750	2,030	2,610	6,450	6,100	6,420	6,130
Wood	3,010	3,980	6,760	12,310	12,610	12,860	13,690
Other**	60	800	2,870	3,150	3,250	3,280	3,300
Total Materials in Products	54,300	84,100	108,540	146,920	145,520	151,510	157,290
Other Wastes							
Food Wastes	12,200	12,800	13,200	13,200	13,300	13,500	13,800
Yard Trimmings	20,000	23,200	27,500	35,000	35,000	35,000	32,800
Miscellaneous Inorganic Wastes	1,300	1,780	2,250	2,900	2,950	3,000	3,050
Total Other Wastes	33,500	37,780	42,950	51,100	51,250	51,500	49,650
Total MSW Generated - Weight	87,800	121,880	151,490	198,020	196,770	203,010	206,940
	Percent of Total Generation						
Materials	**1960**	**1970**	**1980**	**1990**	**1991**	**1992**	**1993**
Paper and Paperboard	34.1%	36.2%	36.1%	36.7%	36.1%	36.6%	37.6%
Glass	7.6%	10.4%	9.9%	6.7%	6.5%	6.5%	6.6%
Metals							
Ferrous	11.3%	10.3%	7.6%	6.3%	6.4%	6.3%	6.2%
Aluminum	0.4%	0.7%	1.2%	1.4%	1.5%	1.4%	1.4%
Other Nonferrous	0.2%	0.5%	0.7%	0.6%	0.6%	0.6%	0.6%
Total Metals	*11.9%*	*11.6%*	*9.5%*	*8.3%*	*8.5%*	*8.3%*	8.3%
Plastics	0.5%	2.5%	5.2%	8.5%	8.8%	9.1%	9.3%
Rubber and Leather	2.3%	2.7%	2.8%	3.0%	2.9%	3.0%	3.0%
Textiles	2.0%	1.7%	1.7%	3.3%	3.1%	3.2%	3.0%
Wood	3.4%	3.3%	4.5%	6.2%	6.4%	6.3%	6.6%
Other	0.1%	0.7%	1.9%	1.6%	1.7%	1.6%	1.6%
Total Materials in Products	61.8%	69.0%	71.6%	74.2%	74.0%	74.6%	76.0%
Other Wastes							
Food Wastes	13.9%	10.5%	8.7%	6.7%	6.8%	6.6%	6.7%
Yard Trimmings	22.8%	19.0%	18.2%	17.7%	17.8%	17.2%	15.9%
Miscellaneous Inorganic Wastes	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Total Other Wastes	38.2%	31.0%	28.4%	25.8%	26.0%	25.4%	24.0%
Total MSW Generated - %	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

* Generation before materials recovery or combustion. Does not include construction & demolition debris, industrial process. wastes, or certain other wastes.
Details may not add to totals due to rounding.
Source: EPA, *Characterization of Municipal Solid Waste in the Unite States:* 1994 Update

TABLE 8
RECOVERY* OF MUNICIPAL SOLID WASTE, 1960 TO 1993
(In thousands of tons and percent of generation of each material)

	Thousands of Tons						
Material	**1960**	**1970**	**1980**	**1990**	**1991**	**1992**	**1993**
Paper and Paperboard	5,360	7,420	11,850	20,250	22,510	24,480	26,460
Glass	100	160	750	2,630	2,560	2,890	3,010
Metals							
Ferrous	50	150	370	1,710	2,320	2,780	3,370
Aluminum	Neg.	10	340	1,010	1,040	1,110	1,050
Other Nonferrous	Neg.	330	540	730	740	720	780
Total Metals	*50*	*490*	*1,250*	*3,450*	*4,100*	*4,610*	*5,200*
Plastics	Neg.	Neg.	20	370	450	600	680
Rubber and Leather	330	250	130	330	350	360	370
Textiles	10	10	20	580	820	800	720
Wood	Neg.	Neg.	Neg.	390	810	1,070	1,320
Other**	Neg.	300	500	680	690	670	730
Total Materials in Products	5,850	8,630	14,520	28,680	32,290	35,480	38,490
Other Wastes							
Food Wastes	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.
Yard Trimmings	Neg.	Neg.	Neg.	4,200	5,000	6,000	6,500
Miscellaneous Inorganic Wastes	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.
Total Other Wastes	Neg.	Neg.	Neg.	4,200	5,000	6,000	6,500
Total MSW Recovered - Weight	5,850	8,630	14,520	32,880	37,290	41,480	44,990
	Percent of Generation of Each Material						
Materials	**1960**	**1970**	**1980**	**1990**	**1991**	**1992**	**1993**
Paper and Paperboard	17.9%	16.8%	21.7%	27.9%	31.7%	32.9%	34.0%
Glass	1.5%	1.3%	5.0%	20.0%	20.1%	22.0%	22.0%
Metals							
Ferrous	0.5%	1.2%	3.2%	13.7%	18.5%	21.6%	26.1%
Aluminum	Neg.	1.2%	19.3%	35.3%	34.9%	38.1%	35.4%
Other Nonferrous	Neg.	49.3%	48.2%	66.4%	64.3%	62.1%	62.9%
Total Metals	*0.5%*	*3.5%*	*8.6%*	*21.0%*	*24.6%*	*27.2%*	*30.3%*
Plastics	Neg.	Neg.	0.3%	2.2%	2.6%	3.2%	3.5%
Rubber and Leather	16.3%	7.7%	3.0%	5.6%	6.0%	6.0%	5.9%
Textiles	0.6%	0.5%	0.8%	9.0%	13.4%	12.5%	11.7%
Wood	Neg.	Neg.	Neg.	3.2%	6.4%	8.3%	9.6%
Other	Neg.	37.5%	17.4%	21.6%	21.2%	20.4%	22.1%
Total Materials in Products	10.8%	10.3%	13.4%	19.5%	22.2%	23.4%	24.5%
Other Wastes							
Food Wastes	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.
Yard Trimmings	Neg.	Neg.	Neg.	12.0%	14.3%	17.1%	19.8%
Miscellaneous Inorganic Wastes	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.
Total Other Wastes	Neg.	Neg.	Neg.	8.2%	9.8%	11.7%	13.1%
Total MSW Recovered - %	6.7%	7.1%	9.6%	16.6%	19.0%	20.4%	21.7%

* Recovery of postconsumer wastes for recycling and composting; does not include converting fabrication scrap.

** Recovery of electrolytes in batteries; probably not recycled.

Neg. = Negligible.

Details may not add to totals due to rounding

Source: EPA, *Characterization of Municipal Solid Waste in the Unite States:* 1994 Update

FIGURE 9
SEASONAL VARIATION - PAPER

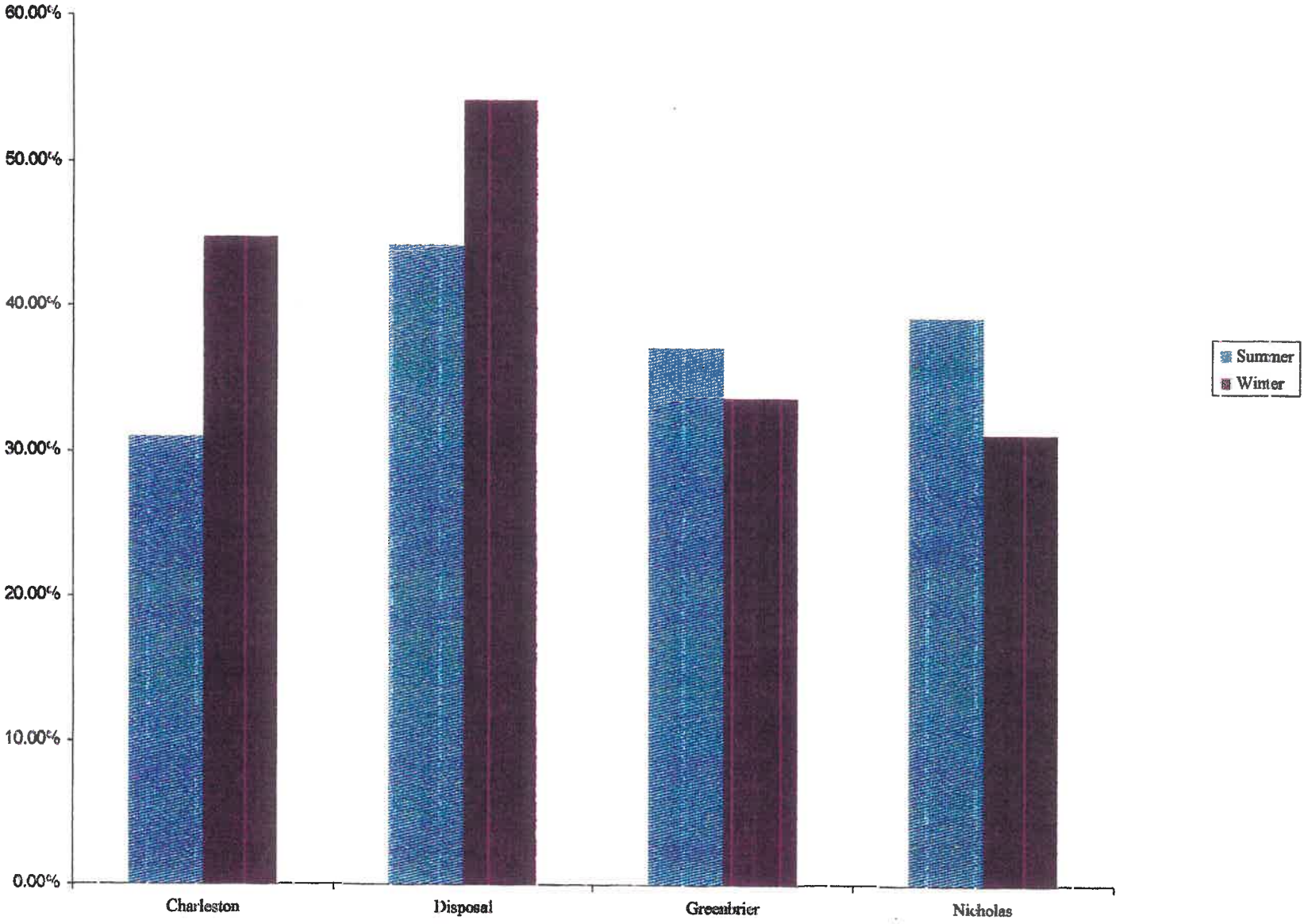


FIGURE 10
SEASONAL VARIATION-ORGANICS

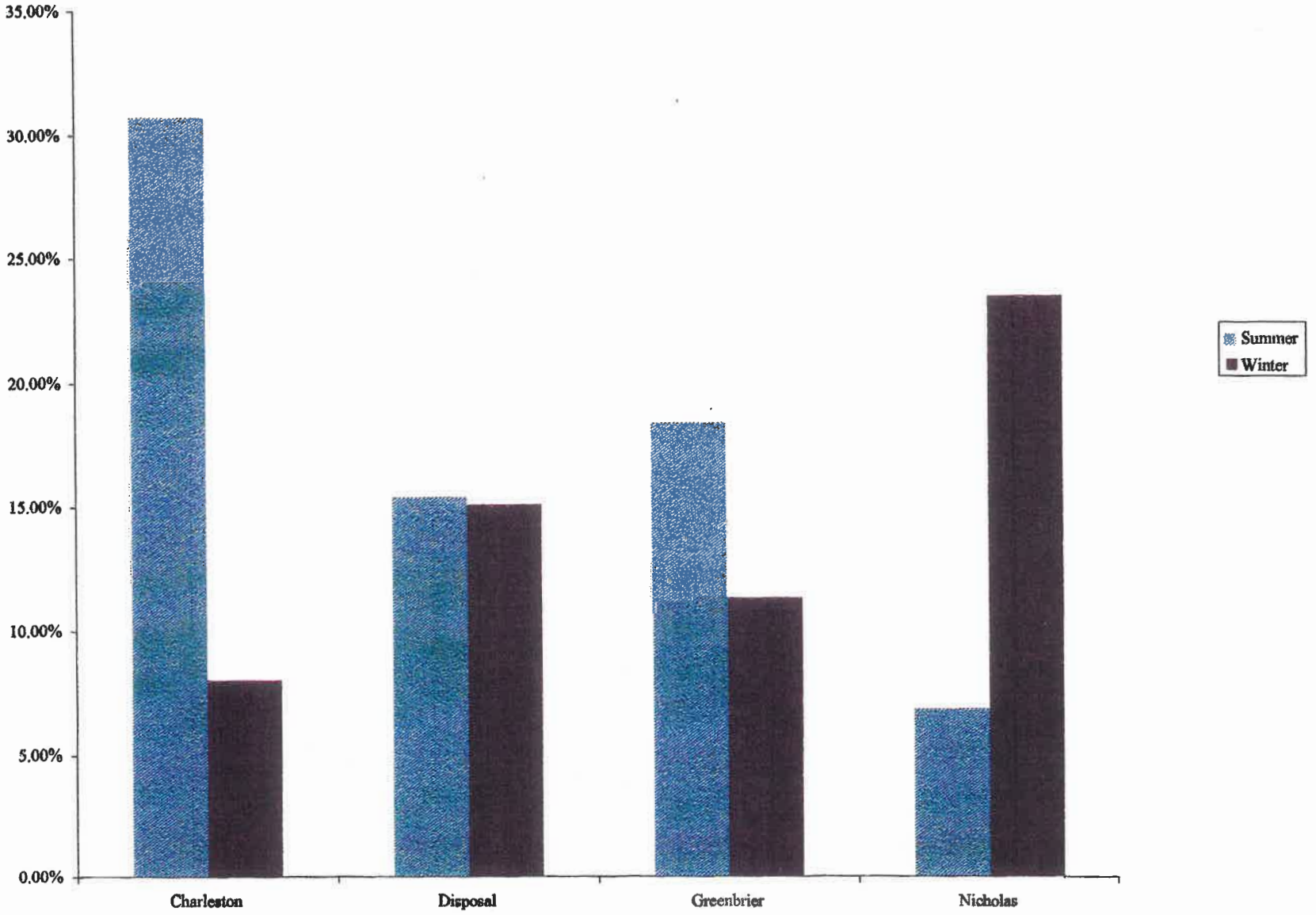


FIGURE 11
SEASONAL VARIATION - PLASTICS

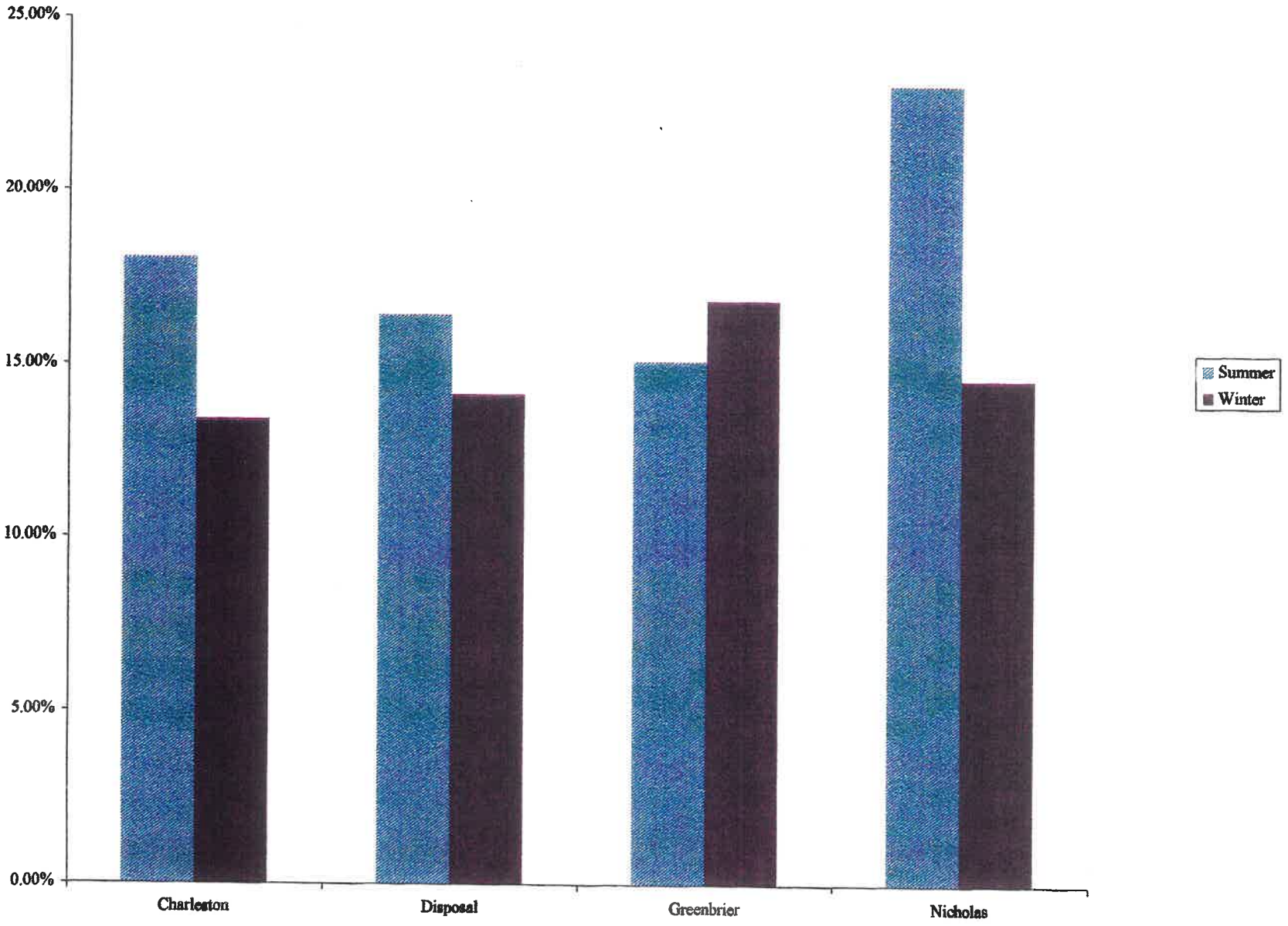


FIGURE 12
SEASONAL VARIATION - TEXTILES

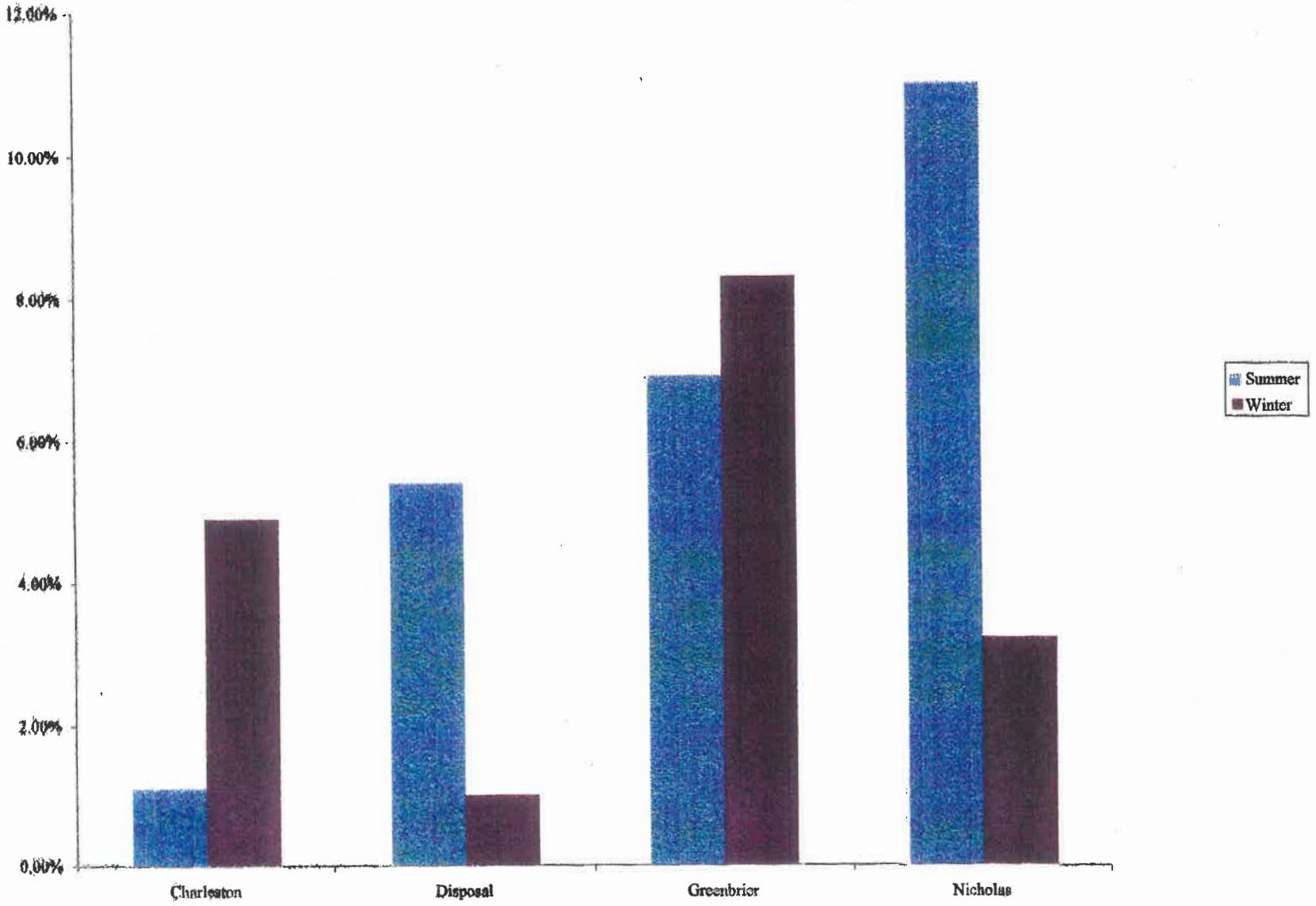


FIGURE 13
SEASONAL VARIATION - GLASS

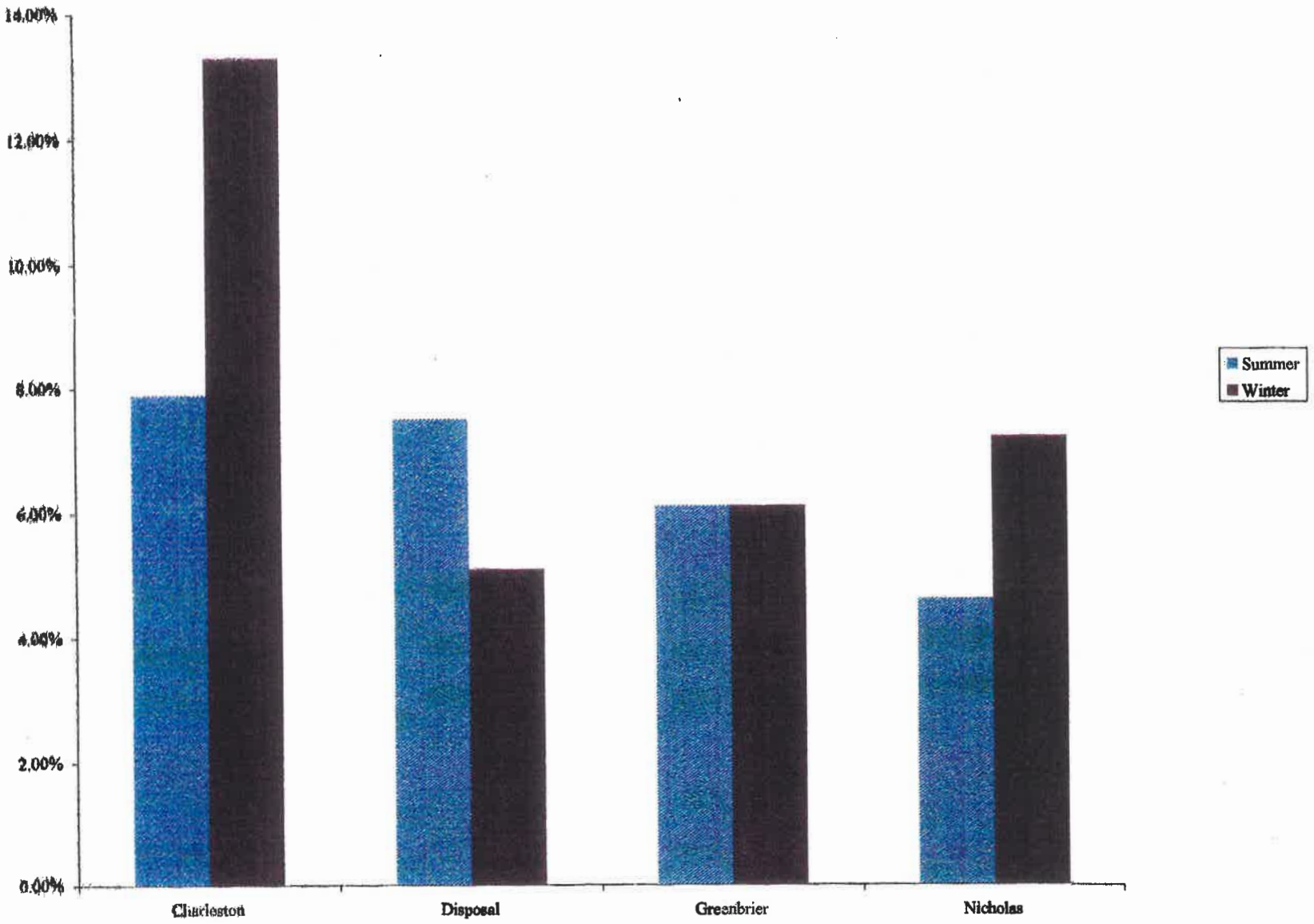


FIGURE 14
SEASONAL VARIATION - METALS

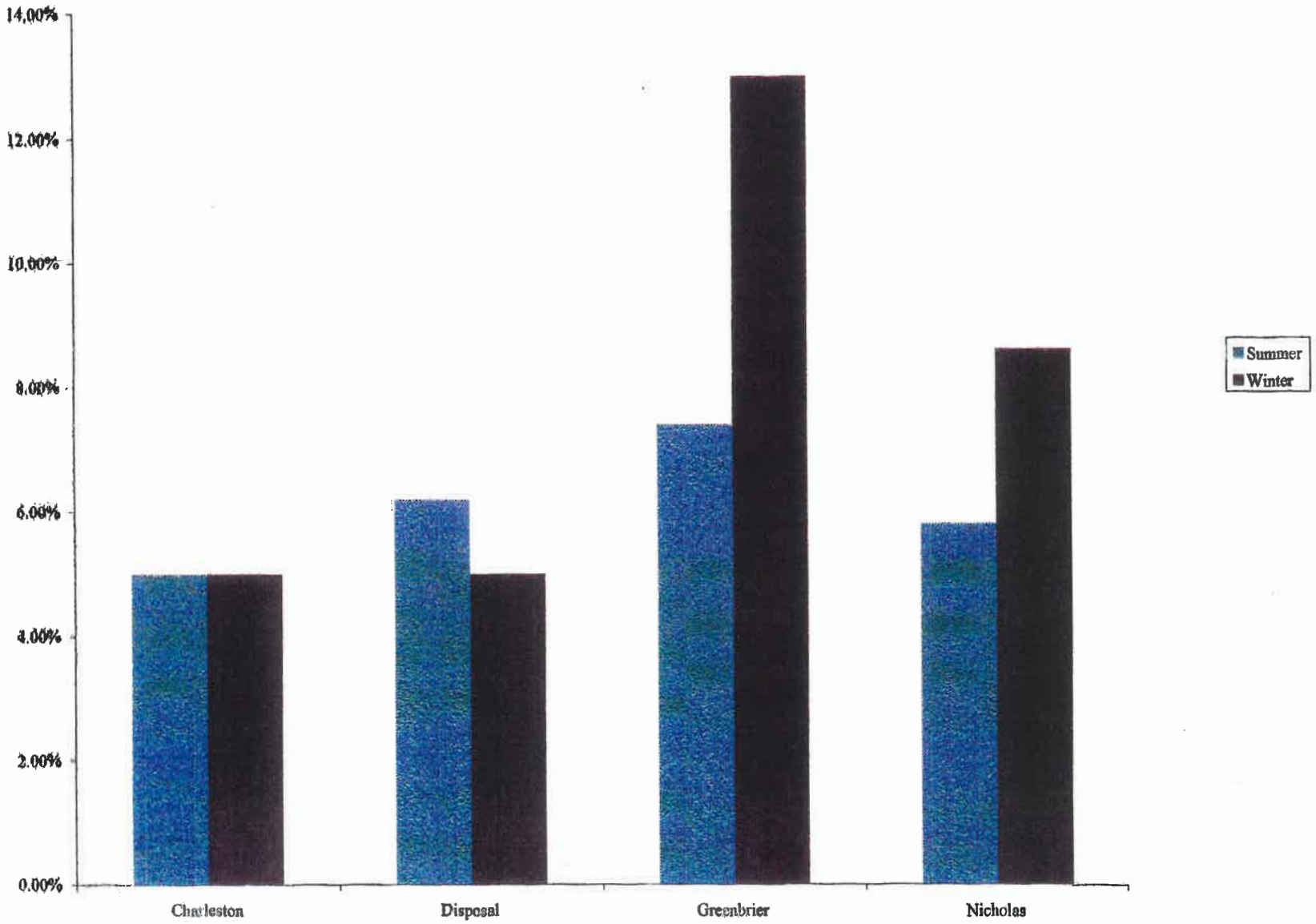


FIGURE 15
SEASONAL VARIATION - RUBBER

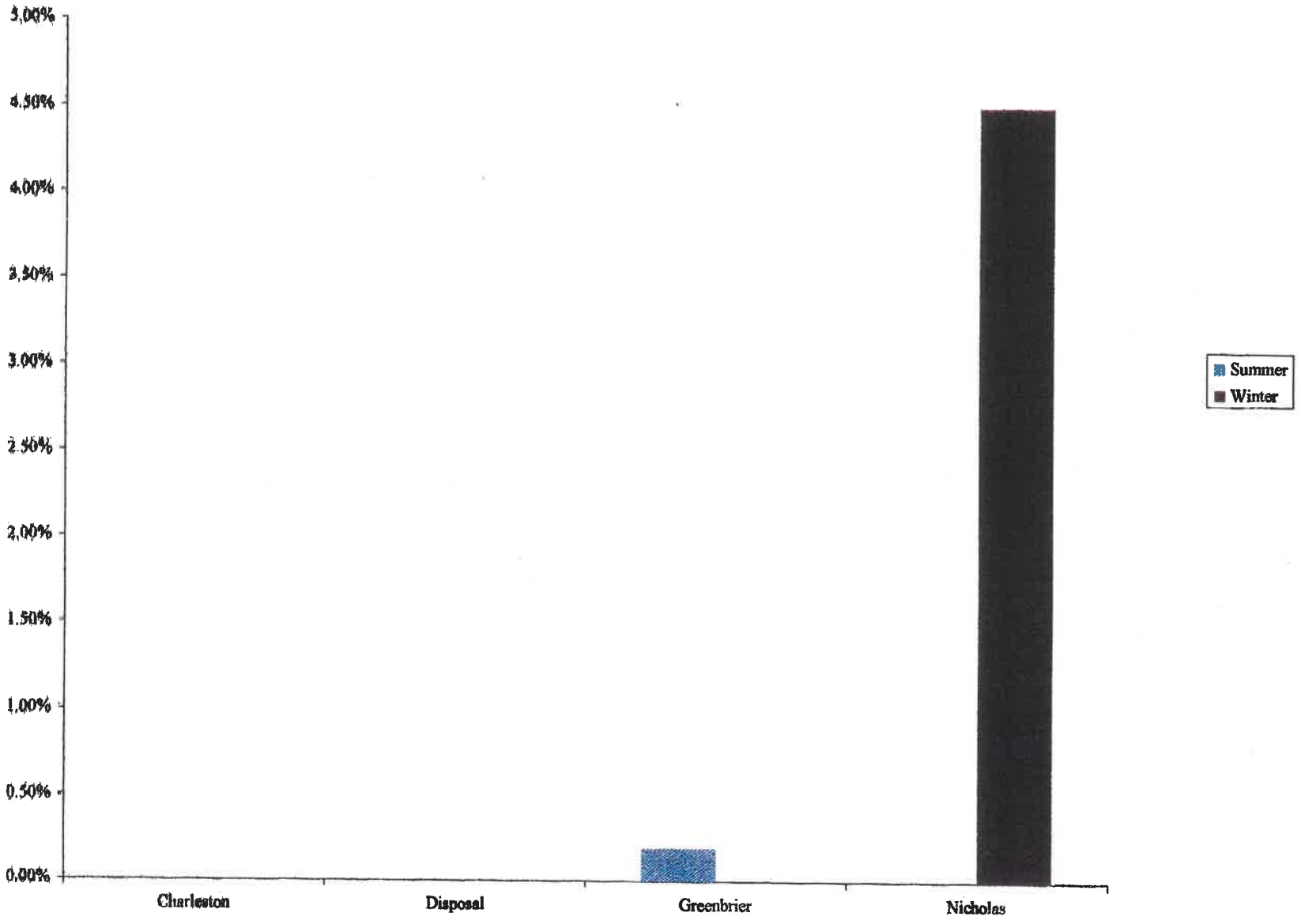


FIGURE 16
SEASONAL VARIATION - CONSTRUCTION RUBBLE

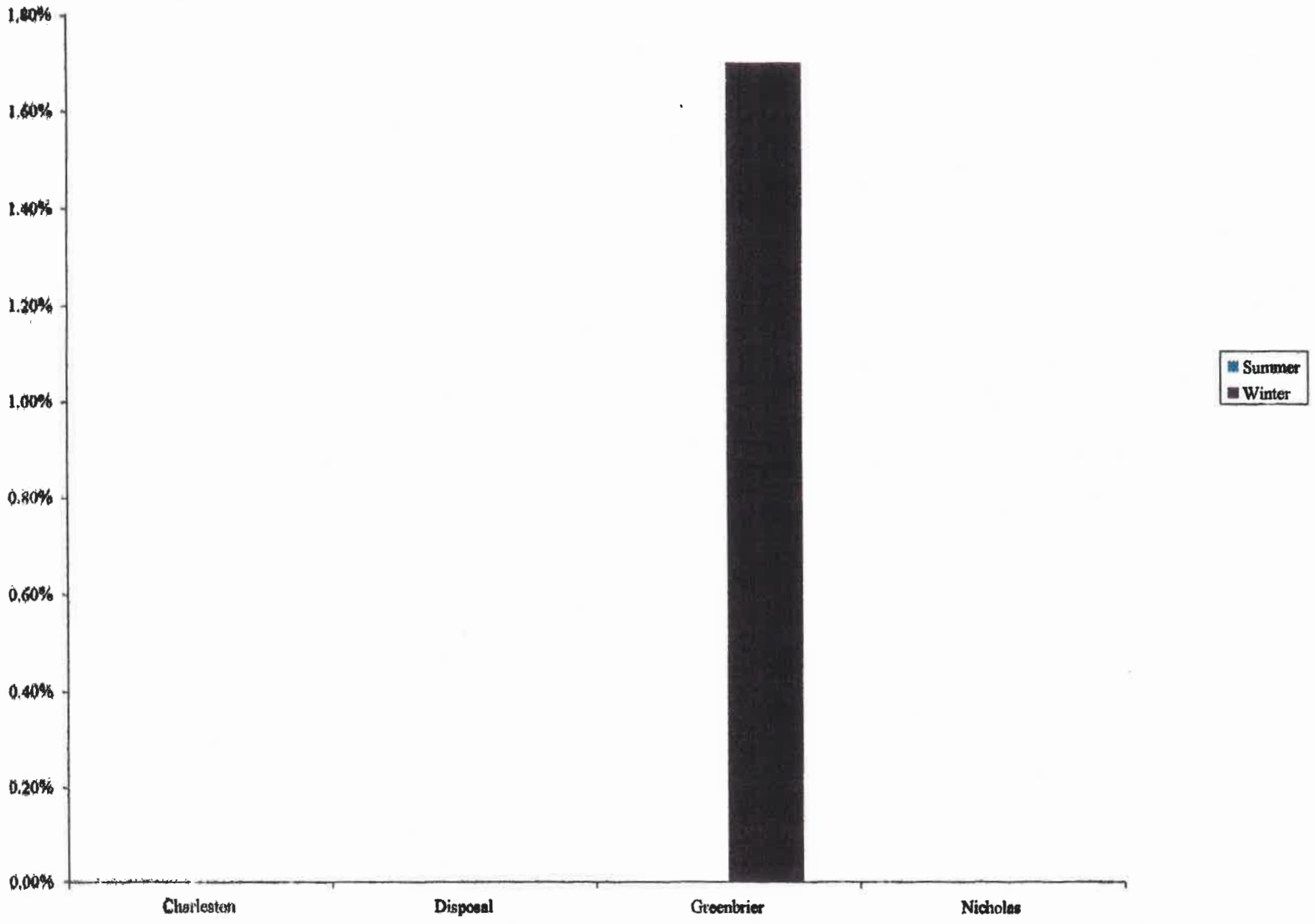


FIGURE 17
SEASONAL VARIATION - WOOD

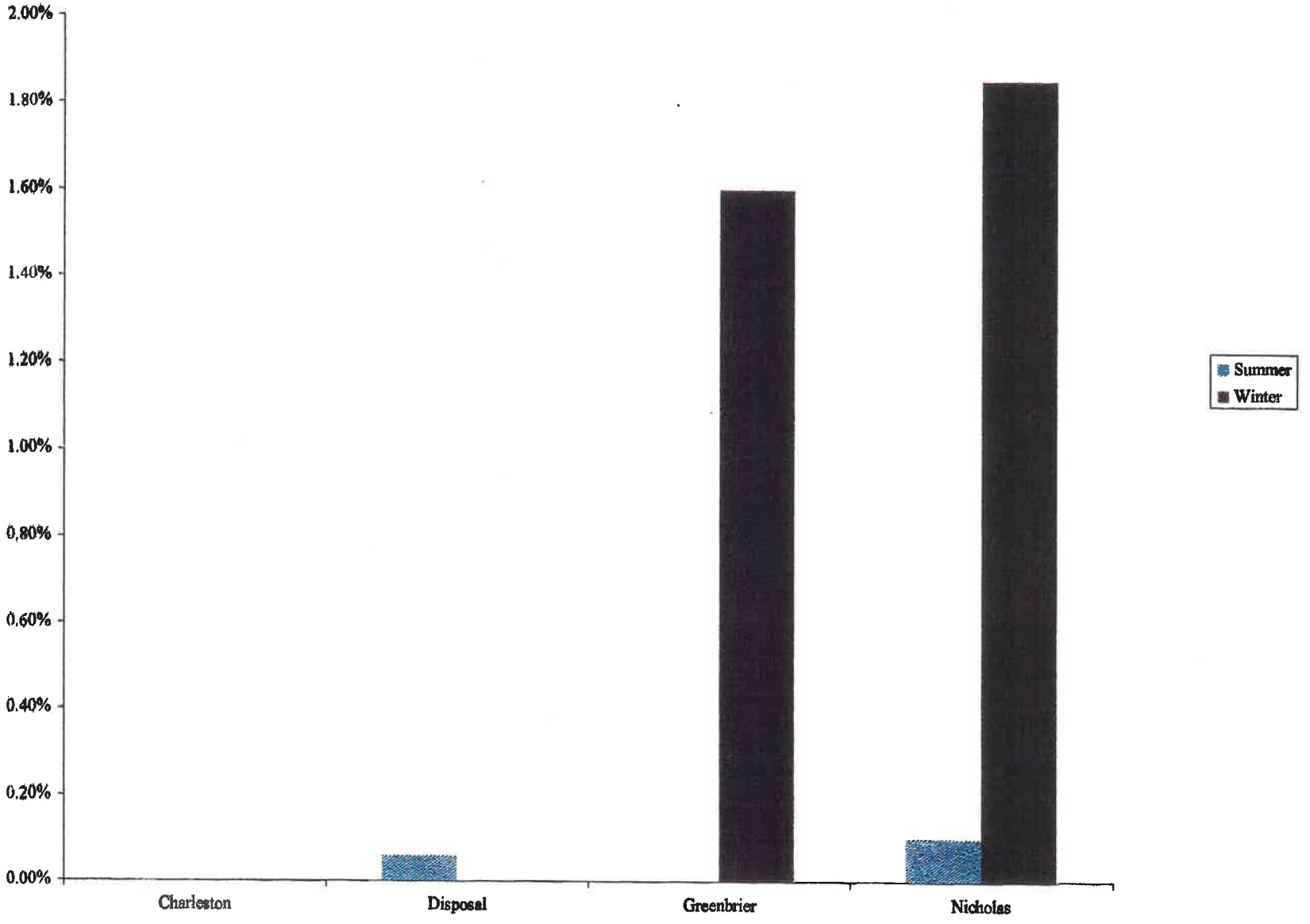


FIGURE 18
SEASONAL VARIATION - MISCELLANEOUS

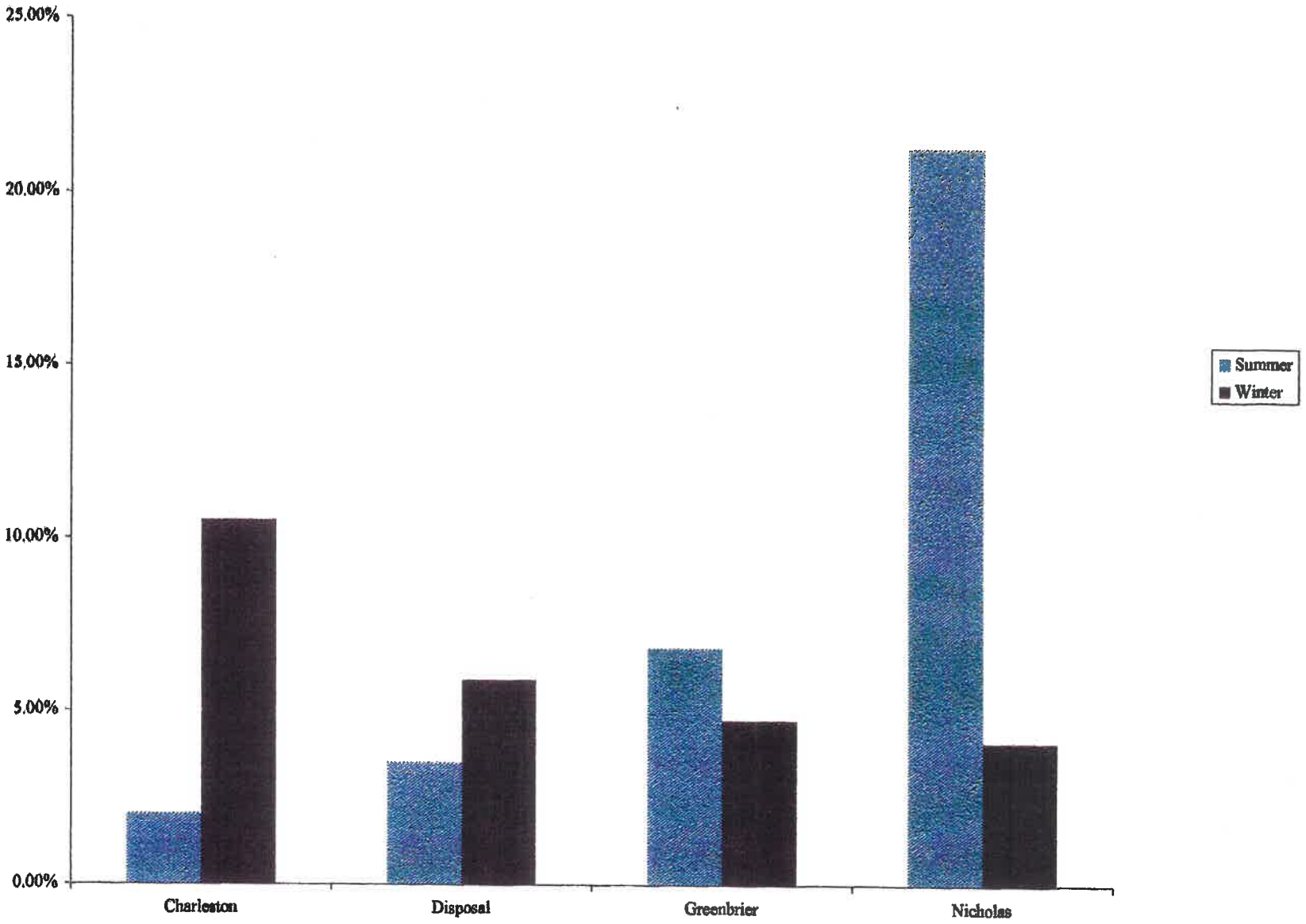
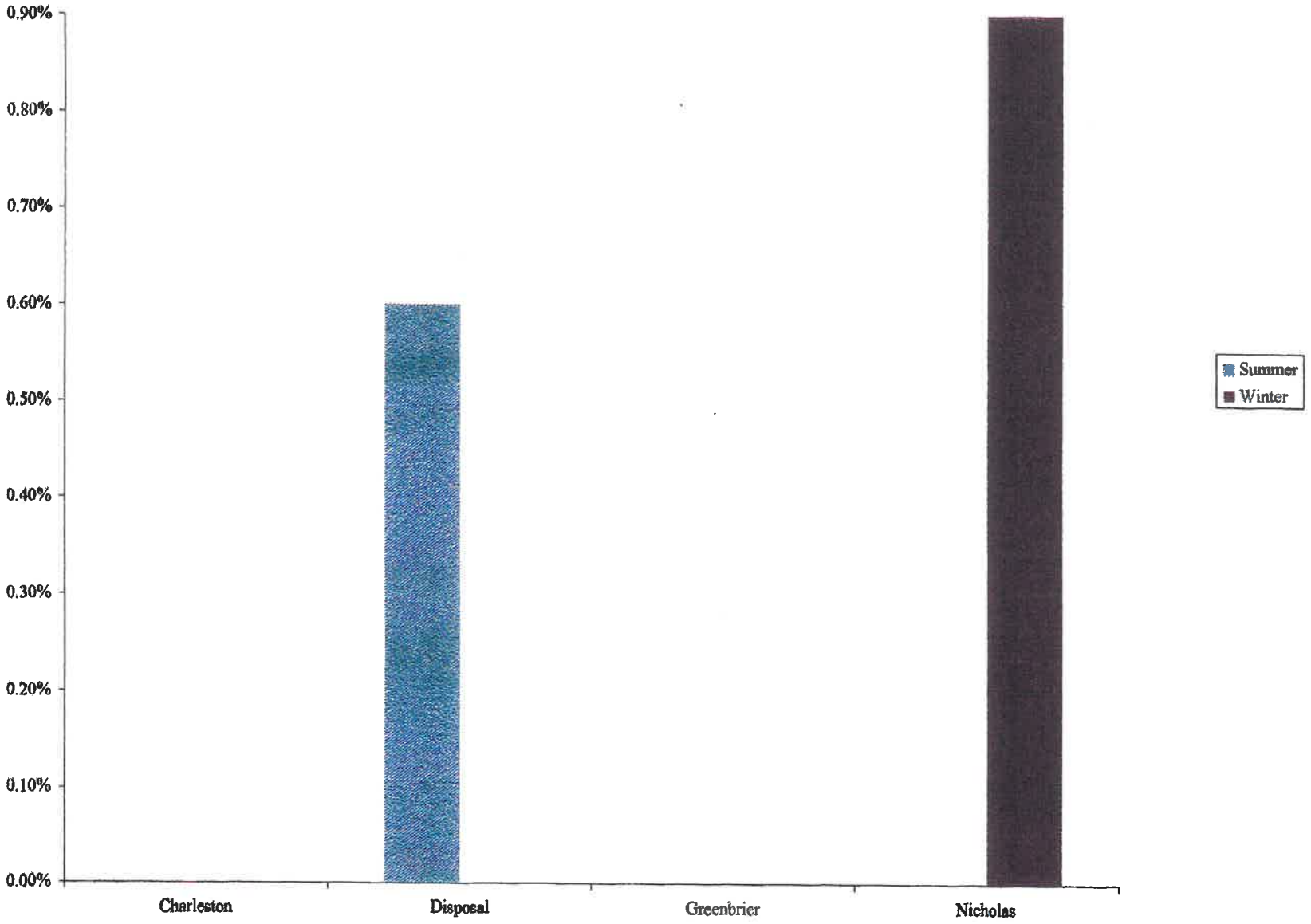


FIGURE 19
SEASONAL VARIATION - OVERSIZED ITEMS



1. Method 1

The per capita generation of MSW was determined by obtaining the total weight of MSW disposed in the wasteshed that had been generated in that wasteshed for a year and divided by the population of the wasteshed. This method allowed comparisons that assess the influence of population density to be evaluated by comparing the rates obtained for Wastesheds F and H. Also, evaluations were made and compared to EPA per capita generation rates since similar methods of estimating the PCG were utilized. The total weight of MSW in a given wasteshed was obtained from the WVDEP report entitled "*The 1994 Solid Waste Update.*" The weight of MSW disposed in the wasteshed was a total weight including all MSW (residential, commercial, industrial, construction/demolition, institutional, agricultural, bulky goods, asbestos, petroleum contaminated soils, sewage sludge, industrial sludge, and tires) as reported by the landfills in West Virginia. The population of each wasteshed was determined from the 1990 Census. Per capita generation rates were determined for Wastesheds F and H for 1993 and 1994. The WVDEP 1995 Solid Waste Update has not been released as of the date of this report. Therefore, GAI did not determine the per capita generation for 1995. Calculations for determining PCG are presented in Appendix D (Page D-6).

The per capita generations determined per the method above are as follows:

	WASTESHED F (pounds per person per day)	**WASTESHED H (pounds per person per day)**
1993	3.49	4.51
1994	3.55	4.60

2. Method 2

Another method to evaluate the per capita generation of MSW utilized the weight of MSW disposed in the wasteshed that was produced by residential and commercial sources in a given time

period (one month) and divided this weight by the number of people per residential and commercial customer serviced that contribute to the weight. In order to find the PCG of MSW for Wasteshed F and Wasteshed H, the following equation was generated:

$$PCG = \frac{W}{D[C_R P_R + C_C P_C]}$$

Where: PCG = Per Capita Generation of MSW(pounds per person per day)

W = Weight of Residential and Commercial MSW Landfilled in the Wasteshed (pounds)

D = Days per time period (days)

C_R = Total residential Customers (units)

C_C = Total commercial customers (units)

P_R = People per residential customers (people per unit)

P_C = People per commercial customers (people per unit)

This equation was generated by knowing that the goal was to find the PCG of MSW in pounds per person per day. There are three main attributes to this equation: (1) the weight of the MSW landfilled (in residential and commercial units, W); (2) the number of people that produced the landfilled MSW ($C_R P_R + C_c P_c$); and (3) the time period in which this MSW was landfilled (D). The following methodology shows the techniques and sources used to estimate the variables to solve this equation. Per capita generation calculations are presented in Appendix D (Page D-33).

It was determined that for each landfill there were two main sources of MSW delivery: (1) private haulers and (2) municipal haulers. Private haulers are MSW hauling companies who provide waste collection and disposal to residential and/or commercial generators for a stated fee. Municipal haulers are MSW haulers who are managed and owned by the individual municipality that is providing the collection and disposal service. Generally, municipal haulers are only responsible for collection and disposal of residential and/or commercial MSW within their

municipality. Per capita generation rates were estimated over the wasteshed to minimize the effect of haulers servicing an area (county or wasteshed) that is not the primary source for MSW tonnages reported at landfills included in the sampling program of this study.

The approximate number of customers serviced by the landfills was obtained through the Public Service Commission (PSC). The PSC regulates waste haulers and maintains records regarding customers serviced by waste haulers and municipalities. The approximate number of customers was determined by summing the PSC's reported customers for private haulers and municipalities that disposed waste the specific landfill, hence C_R and C_C. Note that individuals who deliver their own MSW to disposal facilities were not included in generating the C_R and C_C variables.

By using the "Public Service Commission's (PSC) Hauler Data" (revised 7-7-95), the total number of residential and commercial units served by private haulers in the wastesheds were estimated. The PSC data source lists by county: (1) the names of the haulers; (2) the number of units served (residential and commercial) by each hauler; and (3) the landfill(s) which each hauler delivers the collected MSW. The number of units served by private haulers, which have their MSW landfilled in Wasteshed F and Wasteshed H were estimated from the PSC data.

By using another data list from the PSC entitled "County Municipalities Having Own Trash Service" (revised 5-29-92), the municipalities which provide their own MSW collection and disposal service were determined. The list provided information about the number of residential and commercial units served by each municipality. A list of the municipalities, which provide MSW collection and disposal services in Wasteshed F and Wasteshed H, was compiled. Since the data was revised in 1992, each municipality on the list was contacted via the telephone. Each municipality was asked three questions: (1) How many residential and commercial units does the municipality serve; (2) Where do they landfill their MSW; and (3) How long have they landfilled their MSW at that landfill. From these questions the number of residential and commercial units per the PSC list was confirmed and/or revised based on the telephone conversation. Figures 20 and 21 present a

graphical summary of private and municipal haulers associated with Wastesheds F and H, as reported by the PSC.

After the total number of residential and commercial customers per private hauler and municipal hauler was determined, the next step was to find the number of people that C_R and C_C represented. The persons per customer were taken from the persons per household for the 1990 Census and calculated using the West Virginia Bureau of Employment Program 1995 Employment and Wages Report. Persons per residential customer (P_R) were assumed to be equivalent to the average number of persons per household as reported by the 1990 Census for the State of West Virginia. Persons per commercial customer (P_C) were assumed to be equivalent to the wasteshed average number of persons per business as calculated by data from the 1995 Employment and Wages Report. From the 1990 Census, there were approximately 2.55 people per household in West Virginia. Therefore, 2.55 people per residential unit was used, hence P_R.

In the "West Virginia Employment and Wages Report, 1995" the number of employed people and the number of commercial units are listed per county. By dividing the number of commercial units into the total number of employed people, an average number of people per commercial unit per county was found. These numbers were then averaged over the counties encompassed in the wasteshed, hence P_C. A P_C value of 11.4 and 13.7 people per commercial customer were used for Wastesheds F and H, respectively.

The next step was to find the total amount of waste generated by these individuals, W. "Monthly Tonnage Reports" were requested from the West Virginia Department of Environmental Protection (WVDEP) for each landfill in Wastesheds F and H. These reports were requested for the months of April and July of 1996 to show seasonal variations, if present. Contained on these reports were the amounts of residential and commercial MSW, which each landfill received during the given month. Each report was broken down into "In-shed MSW" (MSW received from sources within the wasteshed) and "Out-of-Shed MSW" (MSW received from sources lying outside of the wasteshed). Only In-shed MSW was used in this per capita generation determination. From these

reports the tonnage of MSW per landfill was determined, and then the total tonnage of "In-shed" MSW per wasteshed were totaled, hence *W*. Residential and commercial tonnages were taken from landfill tonnage sheets and were based on each individual landfill classification of the source of MSW generation. Variations in the classification of the type of MSW by landfill operators was minimized by taking residential and commercial sources as a total weight of MSW to reduce variations in waste classification reporting.

The following are the results of the calculations:

	WASTESHED F (pounds per person per day)	**WASTESHED H (pounds per person per day)**
April 1996	3.48	3.89
July 1996	3.88	4.07

- April = 30 days
- July = 31 days

This method to evaluate the PCG rate does not account for industrial, construction/demolition, institutional, agricultural, bulky goods, asbestos, petroleum contaminated soils, sewage sludge, industrial sludge, and tires wastes. The PCG rates were based on residential and commercial tonnages only.

FIGURE 20
CUSTOMER SOURCES FOR WASTESHED F

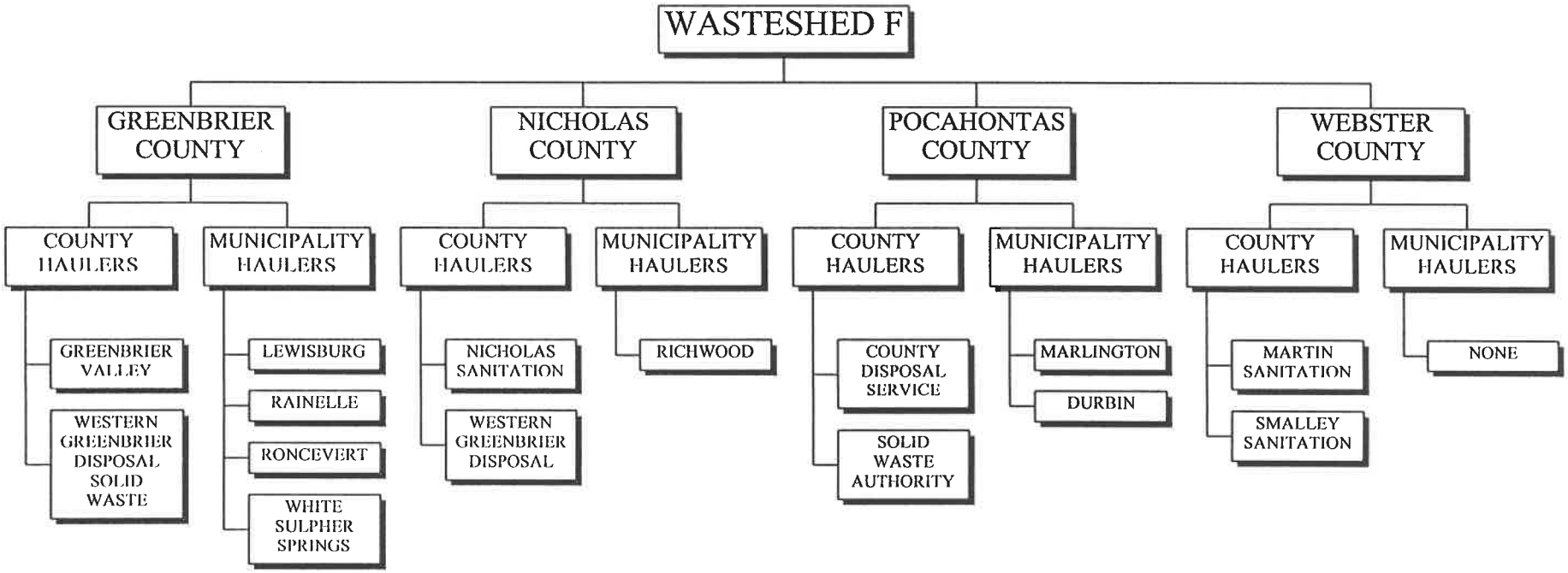
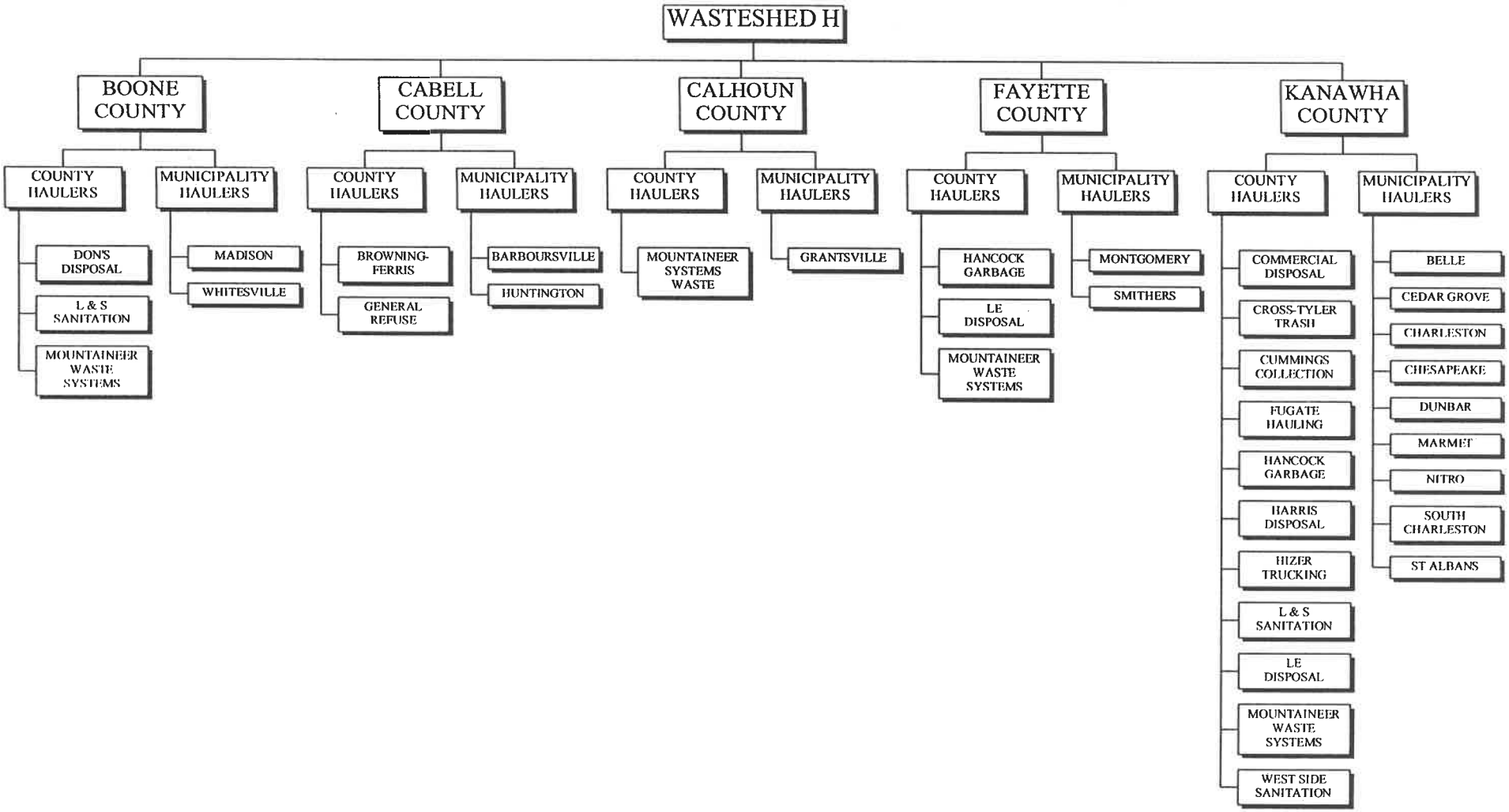
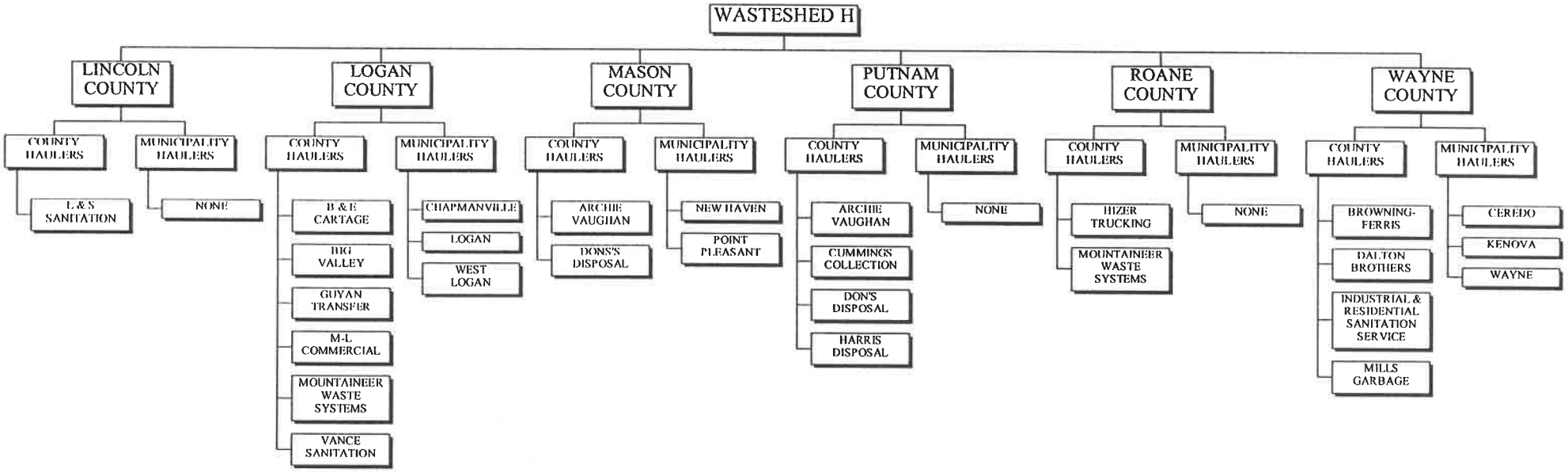


FIGURE 21
CUSTOMER SOURCES FOR WASTESHED H



Shaded boxes indicate municipalities that dispose MSW outside of wasteshed.

FIGURE 21
CUSTOMER SOURCES FOR WASTESHED H



sShaded boxes indicate municipalities that dispose MSW outside of wasteshed.

The PCG rates calculated accounts for tonnages of illegal waste service (e.g.. neighbors combining waste and paying only for one service). Although, the MSW tonnage is accounted for the number of persons that contribute the tonnages are not included in the customer totals. Including these persons, even if it was possible to account for them, would only, in GAI's opinion, reduce the PCG rate by an insignificant amount. The PCG rates calculated do not account for tonnages of MSW disposed in the wasteshed at sites not regulated by the West Virginia Division of Environmental Protection (e.g. private citizens dumping waste behind their house). The persons who generate this waste were not included as customers since there was no method to estimate the number of persons. Likewise, the tonnage of waste they generate were not included in MSW weight. Private citizens that haul their own waste to landfills are not accounted for in the PCG rate presented. In GAI's opinion, the affect of such persons on the rate given the tonnage they contributed compared to commercial haulers is insignificant on the PCG rate. However, the tonnage of these persons is accounted for in the weight of residential and commercial MSW. Therefore, neglecting these customers has produced, an increase in the PCG rate. In GAI's opinion, this increase is insignificant to the calculated PCG rate.

3. Analysis

In an attempt to evaluate the validity of the per capita generation rates calculated, the generation rates were multiplied by the population of its respective wasteshed per the 1990 Census. This provides an estimate of the quantity of MSW generated by residential and commercial sources based on the calculated generation rates from GAI's study. Table 9 presents the calculated tonnages. Calculations are presented in Appendix D (Page D-37).

TABLE 9
ESTIMATED ANNUAL RESIDENTIAL AND COMMERCIAL MSW GENERATION USING CALCULATED PER CAPITA GENERATION RATES

Method 1 of Calculating Per Capita Generation	**Wasteshed F (Tons)**	**Wasteshed H (Tons)**
1993	51,722	434,077
1994	52,611	442,739
Method 2 of Calculating Per Capita Generation	**Wasteshed F (Tons)**	**Wasteshed H (Tons)**
April 1996	51,573	374,403
July 1996	57,501	391,727

The tonnages of residential and commercial waste disposed during 1996 in Wastesheds F and H were determined from WVDEP Monthly Tonnage Reports. In Wasteshed F, approximately 53,318 tons of waste including residential, commercial, and free-day sources were disposed. In Wasteshed H, approximately 394,151 tons of waste including residential, commercial, free-day, and exported sources were disposed. Exported sources includes residential and commercial waste generated in Wasteshed H and exported to Kentucky and Ohio for disposal. Comparing the calculated tonnages with Wasteshed F and Wasteshed H tonnages disposed in 1996, the per capita generation rates provide a reasonable estimate of waste generation in Wastesheds F and H.

The West Virginia Public Service Commission estimates that approximately 65 percent and 67 percent of the households in Wastesheds F and H, respectively are served by solid waste haulers. Taking this information into account, the tonnages of waste disposed in the wastesheds in 1996 should be approximately 33 percent to 35 percent higher than the calculated tonnages. However, this is not the case. This discrepancy may be explained by illegal disposal practices in the wastesheds. The illegal disposal practice of households "doubling up" on collection service appears to be the principle method of illegal disposal since the estimated quantity of waste generated using calculated per capita generation rates is roughly the same as the actual disposed in Wastesheds F and H in 1996.

The per capita generation rates determined using the two analysis methods were comparably similar. The highest and lowest PCG rates calculated were 4.60 and 3.48 pounds per person per day, respectively. This represents a variation in PCG rates calculated of approximately 24 percent. PCG rates for Wasteshed F varied from 3.48 to 3.88 pounds per person per day. This represents a variation in PCG rates calculated of approximately 10 percent. Wasteshed H's PCG rates varied from 3.89 to 4.60 per person per day. This represents a variation in PCG rates calculated of approximately 15 percent.

The results of the first method presented to evaluate the per capita generation were compared to previous studies determined by similar methods. The MSW per capita generation values determined using the first analysis method were within approximately 25 percent of the national per

capita generation values presented in the EPA's *Characterization of Municipal Solid Waste in the United States*: 1994 Update. The 1993 per capita generation of MSW was 4.4 pounds per person per day as reported by the EPA.

Per capita generation of MSW as determined by Nassaux-Hemsley, Inc. in Marion County, West Virginia during a 1992 Solid Waste Characterization study, was 4.0 pounds per person per day based on the average annual waste generation in Marion County. Also, the study stated that 3.5 pounds per person per day of MSW was generated if only commercial, residential, industrial, bulky goods, tires, and yard wastes generated in a year were used as the waste source (One World Company, 1992). The values reported are within 32 percent of the rates calculated by GAI.

In both methods of determining per capita generation, Wasteshed H's generation rate was higher than Wasteshed F. The factors that affect this observation could be localized disposal habits or regulations since the per capita generation for Wasteshed H was higher than Wasteshed F for both analysis methods. This could indicate different disposal habits in rural areas compared to urban areas. However, this trend should be further developed prior to concluding the influencing factors of this observation.

The factors that affect the MSW generation and per capita generation are beyond the scope of this study. There are a vast quantity of methods and data available to estimate the per capita generation of MSW. Other studies could be undertaken by the SWMB that concentrates on per capita generation. These studies could include evaluating factors affecting MSW per capita generation.

IV. CONCLUSIONS

This report was to summarize the sampling procedures, present the sampling results, and present conclusions that could be drawn from the sampling program data and analysis. Based on data collected and analyzed during this MSW Characterization Study the following conclusions have been drawn based on GAI's interpretation of the data collected:

- The affect of seasonal variation on the waste stream was minimal based on data collected during this study. However, the affect of seasonal variation on the waste stream is difficult to determine based on the limited sampling program.

- The per capita generation in Wasteshed H is greater than the generation rate in Wasteshed F.

- The per capita generation rate in Wasteshed F is approximately 3.7 pounds per person per day.

- The per capita generation rate in Wasteshed H is approximately 4.0 ponds per person per day.

- The average weight of a bag of MSW sampled in Wastesheds F and H is approximately 9.9 pounds.

- Paper, plastic, metals, and glass are considered the wastestream components most feasible to be recycled.

- Paper composes the largest percentage of the waste stream in Wastesheds F and H.

- The total tons of MSW landfilled in Wasteshed H was greater than the total tons landfilled in Wasteshed F during this study.

- Based on data from this study, the residential and commercial waste stream in Wasteshed F was composed of the following percentages of each component sampled:

Paper = 34.6%	Rubber = 1.3%
Organics = 16.1%	Construction Rubble = 0.5%
Plastics = 16.5 %	Wood Products = 1.0%
Textiles = 6.8%	Miscellaneous and Fines = 7.3%
Glass = 6.2%	Oversized Items = 0.3%
Metals = 9.3%	

The percentages are based on the total weight of each component sorted and the total weight of MSW sorted in the wasteshed during winter and summer samplings. Percentages may not equal 100 percent due to sample loss and/or absorption of moisture during sampling.

- Based on GAI's evaluation of the data, the following percentage of the residential and commercial waste stream in Wasteshed F is believed to be recyclable:

Paper = 21%	Rubber = 0%
Organics = 0%	Construction Rubble = 0%
Plastics = 16%	Wood Products = 0%
Textiles = 6.2%	Miscellaneous and Fines = 0%
Glass = 6.2%	Oversized Items = 0%
Metals = 6.2%	

- Based on data from this study the waste stream in Wasteshed H was composed of the following percentages of each component:

Paper = 45.4%	Rubber = 0.0%
Organics = 16.9%	Construction Rubble = 0.0%
Plastics = 15.4 %	Wood Products = 0.1%
Textiles = 2.8%	Miscellaneous and Fines = 5.4%
Glass = 7.8%	Oversized Items = 0.1%
Metals = 5.3%	

The percentages are based on the total weight of each component sorted and the total weight of MSW sorted in the wasteshed during winter and summer samplings. Percentages may not equal 100 percent due to sample loss and/or absorption of moisture during sampling.

- Based on GAI's evaluation of the data, the following percentage of the residential and commercial wastestream in Wasteshed H is believed to be recyclable:

Paper = 22.4%	Rubber = 0%
Organics = 0%	Construction Rubble = 0%
Plastics = 13%	Wood Products = 0%
Textiles = 2.8%	Miscellaneous and Fines= 0%
Glass = 7.8%	Oversized Items = 0%
Metals = 5%	

- Based on GAI's evaluation of the data, recovery of the Organics portion of the residential and commercial wastestream is minimal. Recovery of the organics portion is considered most feasible in areas with higher organics generation rates (industrial or institutional related activities) and source separation prior to disposal.

V. LIMITATIONS

The disadvantage of characterization studies based on a limited number of samples is that the data may be skewed and misleading, if based on sampling during atypical circumstances; for example, unusually wet or dry season, delivery of some unusual wastes, or errors in sampling methodology. Another disadvantage of sampling studies is they do not provide information about trends unless they are performed in a consistent manner over a long period of time. During this study, sampling methods may have created some bias of the samples since only a small portion of a truck was sampled and any loose waste (not in plastic waste bags), such as wood, boxes, etc., may have been omitted or not proportionately collected based on their concentration in the load of waste. Proportional collection requires field estimation of the quantity of the materials by an individual which is inherently biased due to the judgement of different individuals and/or inaccurate estimation of material concentration in the load.

Currently, publicly organized recycling practices are prevalent in the larger cities (Charleston, South Charleston, etc.) of Wasteshed H. However, in Wasteshed F, organized recycling practices were observed to be minimal. Based on the average recyclable fraction of the waste streams in Wastesheds F and H, the impact of recycling on the wastestream characterization data was evaluated. As previously shown in the per capita generation section, Wasteshed H's PCG is slightly higher than Wasteshed F. Therefore, an increased weight of recyclables should be expected from Wasteshed H, assuming that the wastesheds generate proportionate quantities of materials for each person in the wasteshed. However, this is not the case based on GAI's characterization data. Therefore, recycling in Wasteshed H is believed to have influenced the quantity of recyclable materials in the waste stream.

The study conducted presents a point in time of the waste stream of Wastesheds F and H. The conclusions presented are in reference to the data collected and interpretations of GAI's data analysis for this "snapshot" sampling during April and July of 1996. Extrapolation of this data in waste management should be done under extreme care. Any waste management decisions based on

this data should be reviewed periodically to evaluate that the waste stream characteristics have not changed. Waste management must be flexible to change as the waste stream characteristics change.

This report represents GAI's understanding of the factors and data as presented in this report. If factors change as additional data concerning the solid waste stream in West Virginia is obtained, we should be informed so that we may examine the data, and, if necessary, modify or revise the conclusions presented in this report.

LIST OF REFERENCES AND SOURCES OF INFORMATION

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APPENDIX A

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Charleston Landfill

INTERVIEWER: CSB — DATE and TIME: 4/2/96
REVIEWED BY: TWQ — DATE and TIME: 4/2/96

SAMPLE NUMBER: 1 — WASTESHED: H

COMPANY: Mountaineer Waste System
TYPE OF TRUCK: Dump
TRUCK CAPACITY: 30 yard.

WASTE ORIGIN
County: Boone
Town: Whitesville
Other:

TYPE OF WASTE
Single family residence:
Multi-family residence:
Commercial/Institutional: X

Is there a recycling program that exists in the area of route: N/A
If so what materials are recycled: N/A

ADDITIONAL INFORMATION

Waste generated from coal mine facility.
Pallets, rock dust bags, roof bolt, glue boxes, plastic buckets, concrete block.
No sample taken.

NOTES:

Driver - Dave Underwood

NA - Not Applicable since no sample taken.

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waster Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Charleston Landfill

INTERVIEWER: CSB — DATE and TIME: 4/2/96
REVIEWED BY: TWQ — DATE and TIME: 4/2/96

SAMPLE NUMBER: 3 — WASTESHED: H

COMPANY: Mountaineer Waste Systems
TYPE OF TRUCK: Packer
TRUCK CAPACITY: Unknown

WASTE ORIGIN
County: Kanawha
Town: St. Albans
Other:

TYPE OF WASTE
Single family residence: X
Multi-family residence:
Commercial/Institutional:

Is there a recycling program that exists in the area of the route: N/A
If so what materials are recycled: N/A

ADDITIONAL INFORMATION

Renovation of an old house.
Bikes, tires, couch, dryer, Christmas tree, drywall, paint cans, drum set, freon gas bottle.
No sample taken.

NOTES:

Driver - Bear

N/A - Not Applicable since no sample taken.

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Disposal Services, Inc.

INTERVIEWER: CSB — DATE and TIME: 4/3/96
REVIEWED BY: TWQ — DATE and TIME: 4/3/96

SAMPLE NUMBER: 1 — WASTESHED: H

COMPANY: Mullens Contracting
TYPE OF TRUCK: Dump
TRUCK CAPACITY: 5 ton

WASTE ORIGIN
County: Putnam
Town: Winfield
Other:

TYPE OF WASTE
Single family residence: New Construction
Multi-family residence:
Commercial/Institutional:

Is there a recycling program that exists in the area of the route: N/A
If so what materials are recycled: N/A

ADDITIONAL INFORMATION

Load weight unknown, estimated to be 3 tons.
Load included: drywall, insulation, buckets, metal bands, paper, shingles, boxes, felt, metal, styrofoam.
No sample taken.

NOTES:

Driver - Jerry Wagner

N/A - Not Applicable since no sample taken.

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Disposal Services, Inc.

INTERVIEWER CSB DATE and TIME 4/3/96
REVIEWED BY TWQ DATE and TIME 4/3/96

SAMPLE NUMBER 3 WASTESHED H

COMPANY Don's Disposal Service
TYPE OF TRUCK Packer
TRUCK CAPACITY Unknown

WASTE ORIGIN
County Kanawha and Putnam
Town Charleston and Nitro
Other

TYPE OF WASTE
Single family residence
Multi-family residence
Commercial/Institutional X

Is there a recycling program that exists in the area of the route N/A
If so what materials are recycled N/A

ADDITIONAL INFORMATION

Freight, food and produce stores, etc.
Commercial garbage collection route.

No sample taken.

NOTES:

Driver - John Jacobs
Truck No. PSC-F-4820
WVDOT - 419249

N/A -Not Applicable since no sample taken.

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Disposal Services, Inc.

INTERVIEWER: CSB — DATE and TIME: 4/3/96
REVIEWED BY: TWQ — DATE and TIME: 4/3/96

SAMPLE NUMBER: 5 — WASTESHED: H

COMPANY: N/A
TYPE OF TRUCK: Pickup
TRUCK CAPACITY: 1/2 ton

WASTE ORIGIN
County: Lincoln
Town: Branchland
Other:

TYPE OF WASTE
Single family residence: X
Multi-family residence:
Commercial/Institutional: X

Is there a recycling program that exists in the area of the route: No
If so what materials are recycled:

ADDITIONAL INFORMATION

Waste from one family residence and one small office.
No recycling performed.
Dispose of every other month or so.
Sample taken.

NOTES:

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Greenbrier County Landfill

INTERVIEWER: CSB — DATE and TIME: 4/4/96 9:40 a.m.
REVIEWED BY: TWQ — DATE and TIME: 4/4/96

SAMPLE NUMBER: 1 — WASTESHED: F

COMPANY: City of Lewisburg
TYPE OF TRUCK: Packer
TRUCK CAPACITY: Unknown

WASTE ORIGIN
County: Greenbrier
Town: Lewisburg
Other:

TYPE OF WASTE
Single family residence: X
Multi-family residence:
Commercial/Institutional: X

Is there a recycling program that exists in the area of route: Yes
If so what materials are recycled: Aluminum, glass, newspaper, and plastic.

ADDITIONAL INFORMATION

Recycling program is in place. Aluminum, glass, newspaper, and plastic are collected once a month.
Sample taken.
Truck Cargo Weight = 6.84 tons

NOTES:

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Greenbrier County Landfill

INTERVIEWER: CSB — DATE and TIME: 4/4/96
REVIEWED BY: TWQ — DATE and TIME: 4/4/96

SAMPLE NUMBER: 3 — WASTESHED: F

COMPANY: N/A
TYPE OF TRUCK: Pickup
TRUCK CAPACITY: 1/2 ton

WASTE ORIGIN
County: Monroe
Town: Gap Mills
Other:

TYPE OF WASTE
Single family residence: X
Multi-family residence:
Commercial/Institutional:

Is there a recycling program that exists in the area of route: No
If so what materials are recycled:

ADDITIONAL INFORMATION

This man hauls for his neighbors and himself.
Hauls for three to four households.
Sample taken.
Truck Cargo Weight = 0.28 tons

NOTES:

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Greenbrier County Landfill

INTERVIEWER: CSB — DATE and TIME: 4/4/96
REVIEWED BY: TWQ — DATE and TIME: 4/4/96

SAMPLE NUMBER: 5 — WASTESHED: F

COMPANY: City of White Sulfur Springs
TYPE OF TRUCK: Packer
TRUCK CAPACITY: Unknown

WASTE ORIGIN
County: Greenbrier
Town: White Sulfur Springs
Other:

TYPE OF WASTE
Single family residence: X
Multi-family residence:
Commercial/Institutional: X

Is there a recycling program that exists in the area of route: Thinks there is a program.
If so what materials are recycled: Uncertain

ADDITIONAL INFORMATION

Driver thinks there is a recycling program.
Sample taken.
Truck Cargo Weight = 6.9 tons

NOTES:

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Nicholas County Landfill

INTERVIEWER CSB DATE and TIME 4/5/96
REVIEWED BY TWQ DATE and TIME 4/5/96

SAMPLE NUMBER 1 WASTESHED F

COMPANY NA
TYPE OF TRUCK Pickup
TRUCK CAPACITY 1/2-ton

WASTE ORIGIN
County Nicholas
Town Richwood
Other

TYPE OF WASTE
Single family residence X
Multi-family residence
Commercial/Institutional

Is there a recycling program that exists in the area of route N/A
If so what materials are recycled N/A

ADDITIONAL INFORMATION

Waste is from cleaning out of an old shed.
No sample taken.
Waste included aluminum, wood, cardboard, baseboard heater, etc.

NOTES:

The weight of waste was not obtained.

N/A - Not Applicable since no sample taken.

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Nicholas County Landfill

INTERVIEWER CSB DATE and TIME 4/5/96
REVIEWED BY TWQ DATE and TIME 4/5/96

SAMPLE NUMBER 3 WASTESHED F

COMPANY N/A
TYPE OF TRUCK Pickup (Silver and Black Full-size)
TRUCK CAPACITY 1/2 ton

WASTE ORIGIN
County Nicholas
Town Craigsville
Other

TYPE OF WASTE
Single family residence X
Multi-family residence
Commercial/Institutional

Is there a recycling program that exists in the area of route No, see below.
If so what materials are recycled

ADDITIONAL INFORMATION

Sample taken.
Take garbage to the landfill approximately once a month.
Recycles newspapers and plastic bags in Webster County.
Truck Cargo Weight = 340 lbs.

NOTES:

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Nicholas County Landfill

INTERVIEWER CSB DATE and TIME 4/5/96
REVIEWED BY TWQ DATE and TIME 4/5/96

SAMPLE NUMBER 5 WASTESHED F

COMPANY City of Richwood
TYPE OF TRUCK Packer
TRUCK CAPACITY Unknown

WASTE ORIGIN
County Nicholas
Town Richwood
Other Truck #3

TYPE OF WASTE
Single family residence X
Multi-family residence
Commercial/Institutional

Is there a recycling program that exists in the area of route Unknown
If so what materials are recycled

ADDITIONAL INFORMATION

Unknown if recycling program exists.
Sample taken.
Two (2) wooden pallets in load.
Truck Cargo Weight = 4 tons

NOTES:

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Nicholas County Landfill

INTERVIEWER CSB DATE and TIME 7/15/96
REVIEWED BY JKW DATE and TIME 7/15/96

SAMPLE NUMBER 2 WASTESHED F

COMPANY Nicholas Sanitation
TYPE OF TRUCK Packer
TRUCK CAPACITY

WASTE ORIGIN
County Nicholas
Town Summersville to Craigsville
Other

TYPE OF WASTE
Single family residence X
Multi-family residence
Commercial/Institutional

Is there a recycling program that exists in the area of route No
If so what materials are recycled

ADDITIONAL INFORMATION

Truck cargo weight = 4.18 tons
Truck #2
Sample taken.

NOTES:

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Nicholas County Landfill

INTERVIEWER: CSB — DATE and TIME: 7/15/96
REVIEWED BY: JKW — DATE and TIME: 7/15/96

SAMPLE NUMBER: 4 — WASTESHED: F

COMPANY: Nicholas Sanitation
TYPE OF TRUCK: Packer
TRUCK CAPACITY:

WASTE ORIGIN
County: Nicholas
Town: Glade Creek to Phillips Run
Other:

TYPE OF WASTE
Single family residence: X
Multi-family residence:
Commercial/Institutional:

Is there a recycling program that exists in the area of route: No
If so what materials are recycled:

ADDITIONAL INFORMATION

Truck cargo capacity = 2.85 tons
Sample taken.

NOTES:

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Greenbrier County Landfill

INTERVIEWER: CSB — DATE and TIME: 7/16/96
REVIEWED BY: JKW — DATE and TIME: 7/16/96

SAMPLE NUMBER: 2 — WASTESHED: F

COMPANY: City of Ronceverte
TYPE OF TRUCK: Packer
TRUCK CAPACITY:

WASTE ORIGIN
County: Greenbrier
Town: Ronceverte
Other:

TYPE OF WASTE
Single family residence: X
Multi-family residence:
Commercial/Institutional: X

Is there a recycling program that exists in the area of route: Yes
If so what materials are recycled: Aluminum, paper, plastic, glass, and steel.

ADDITIONAL INFORMATION

Truck cargo weight = 2.69 tons
Sample taken.

NOTES:

Mix of residential and commercial.

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Greenbrier County Landfill

INTERVIEWER: CSB — DATE and TIME: 7/16/96
REVIEWED BY: JKW — DATE and TIME: 7/16/96

SAMPLE NUMBER: 4 — WASTESHED: F

COMPANY: Western Greenbrier
TYPE OF TRUCK:
TRUCK CAPACITY:

WASTE ORIGIN
County: Greenbrier
Town: Rainelle, Smoot, Clintonville
Other:

TYPE OF WASTE
Single family residence: X
Multi-family residence:
Commercial/Institutional:

Is there a recycling program that exists in the area of route: No
If so what materials are recycled:

ADDITIONAL INFORMATION

Truck cargo weight = 5.46 tons
Sample taken.

NOTES:

A few businesses on route.

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Greenbrier County Landfill

INTERVIEWER CSB DATE and TIME 7/16/96
REVIEWED BY JKW DATE and TIME 7/16/96

SAMPLE NUMBER 6 WASTESHED F

COMPANY Greenbrier Valley Solid Waste, Inc.
TYPE OF TRUCK Packer
TRUCK CAPACITY

WASTE ORIGIN
County Greenbrier
Town Route 92
Other

TYPE OF WASTE
Single family residence X
Multi-family residence
Commercial/Institutional

Is there a recycling program that exists in the area of route No
If so what materials are recycled

ADDITIONAL INFORMATION

Truck cargo = 6.72 tons
Sample taken.

NOTES:

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Disposal Services, Inc.

INTERVIEWER: CSB — DATE and TIME: 7/17/96
REVIEWED BY: JKW — DATE and TIME: 7/17/96

SAMPLE NUMBER: 2 — WASTESHED: H

COMPANY: Cummings
TYPE OF TRUCK: Packer
TRUCK CAPACITY:

WASTE ORIGIN
County: Putnam
Town: Hurricane
Other: Truck #30

TYPE OF WASTE
Single family residence: X
Multi-family residence:
Commercial/Institutional:

Is there a recycling program that exists in the area of the route: Yes
If so what materials are recycled: Newspaper, cardboard, metal cans, plastics, and glass

ADDITIONAL INFORMATION

Truck cargo weight = 5.68 tons
Truck #30
Sample taken.

NOTES:

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Disposal Services, Inc.

INTERVIEWER: CSB — DATE and TIME: 7/17/96 11:37 a.m.
REVIEWED BY: JKW — DATE and TIME: 7/17/96

SAMPLE NUMBER: 4 — WASTESHED: H

COMPANY: City of South Charleston
TYPE OF TRUCK: Packer
TRUCK CAPACITY:

WASTE ORIGIN
County: Kanawha
Town: South Charleston
Other:

TYPE OF WASTE
Single family residence: X
Multi-family residence:
Commercial/Institutional:

Is there a recycling program that exists in the area of the route: Yes
If so what materials are recycled: Glass, plastic, paper, and metals.

ADDITIONAL INFORMATION

Truck cargo weight = 3.23 tons
Sample taken.

NOTES:

Yard waste observed in load.

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Disposal Services, Inc.

INTERVIEWER: CSB
DATE and TIME: 7/17/96
REVIEWED BY: JKW
DATE and TIME: 7/17/96

SAMPLE NUMBER: 6
WASTESHED: H

COMPANY: City of Dunbar
TYPE OF TRUCK: Packer
TRUCK CAPACITY:

WASTE ORIGIN
County: Kanawha
Town: City of Dunbar
Other:

TYPE OF WASTE
Single family residence: X
Multi-family residence:
Commercial/Institutional:

Is there a recycling program that exists in the area of the route: Yes
If so what materials are recycled: Plastic, aluminum, paper, glass, and bi-metals.

ADDITIONAL INFORMATION

Truck cargo weight = 8.56 tons
Sample taken.

NOTES:

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Charleston Landfill

INTERVIEWER CSB DATE and TIME 7/19/96
REVIEWED BY JKW DATE and TIME 7/19/96

SAMPLE NUMBER 2 WASTESHED H

COMPANY Mountaineer Waste Systems
TYPE OF TRUCK Packer
TRUCK CAPACITY

WASTE ORIGIN
County Kanawha
Town Columbia Gas - Charleston
Other

TYPE OF WASTE
Single family residence
Multi-family residence
Commercial/Institutional X

Is there a recycling program that exists in the area of route Yes
If so what materials are recycled Paper and aluminum.

ADDITIONAL INFORMATION

Truck cargo weight - 5 tons
Sample taken.

NOTES:

WASTE STREAM CHARACTERIZATION INTERVIEW FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Charleston Landfill

INTERVIEWER CSB DATE and TIME 7/19/96 11:00 a.m.
REVIEWED BY JKW DATE and TIME 7/19/96

SAMPLE NUMBER 4 WASTESHED H

COMPANY Hancock Garbage Service (949-2921)
TYPE OF TRUCK Packer
TRUCK CAPACITY

WASTE ORIGIN
County Kanawha
Town Belle
Other

TYPE OF WASTE
Single family residence X
Multi-family residence
Commercial/Institutional

Is there a recycling program that exists in the area of route Yes
If so what materials are recycled Plastic, paper, cans, and glass

ADDITIONAL INFORMATION

Truck cargo weight = 8 tons
Sample taken.

NOTES:

APPENDIX B

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Charleston Landfill

SAMPLE NUMBER 2
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 93.79 LBS.
DATE and TIME 4/2/96
DATE and TIME 4/2/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	1.14	1.22%
MAGAZINES	0.00	0.00%
CORRUGATED	4.25	4.53%
OTHER PAPERBOARDS	6.46	6.89%
BOOKS	0.00	0.00%
OFFICE PAPER	0.00	0.00%
OTHER	25.44	27.12%
TOTAL PAPER	37.29	39.76%
ORGANICS		
FOOD	7.55	8.05%
DISPOSABLE DIAPERS	2.07	2.21%
YARD & GARDEN WASTE	0.00	0.00%
TOTAL ORGANICS	9.62	10.26%
PLASTICS		
PET	5.62	5.99%
HDPE	3.59	3.83%
COMMERCIAL PLASTICS	0.00	0.00%
OTHER - RIGID	0.70	0.75%
OTHER - FLEXIBLE	0.00	0.00%
STYROFOAM	2.18	2.32%
TOTAL PLASTICS	12.09	12.89%
TEXTILES	8.93	9.52%
GLASS	9.62	10.26%
METALS		
ALUMINUM CANS	2.6	2.77%
BI-METAL CANS	0.67	0.71%
FERROUS/TINNED CANS	0.00	0.00%
OTHER FERROUS	0.00	0.00%
OTHER NON-FERROUS	0.00	0.00%
TOTAL METALS	3.27	3.49%

Notes:

Total in-bag weight = 12.15 + 8.33 + 16.17 + 6.24 + 6.10 + 14.2 + 17.10 + 5.30 + 0.55 + 7.65 = 93.79

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Charleston Landfill

SAMPLE NUMBER 4
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 114.19 LBS.
DATE and TIME 4/2/96
DATE and TIME 4/2/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	4.11	3.60%
MAGAZINES	0.00	0.00%
CORRUGATED	0.00	0.00%
OTHER PAPERBOARDS	12.81	11.22%
BOOKS	0.00	0.00%
OFFICE PAPER	0.00	0.00%
OTHER	38.82	34.00%
TOTAL PAPER	55.74	48.81%
ORGANICS		
FOOD	7.02	6.15%
DISPOSABLE DIAPERS	0.00	0.00%
YARD & GARDEN WASTE	0.00	0.00%
TOTAL ORGANICS	7.02	6.15%
PLASTICS		
PET	10.69	9.36%
HDPE	4.53	3.97%
COMMERCIAL PLASTICS	0.00	0.00%
OTHER - RIGID	0.00	0.00%
OTHER - FLEXIBLE	0.00	0.00%
STYROFOAM	0.60	0.53%
TOTAL PLASTICS	15.82	13.85%
TEXTILES	1.28	1.12%
GLASS	18.14	15.89%
METALS		
ALUMINUM CANS	2.26	1.98%
BI-METAL CANS	4.90	4.29%
FERROUS/TINNED CANS	0.00	0.00%
OTHER FERROUS	0.00	0.00%
OTHER NON-FERROUS	0.00	0.00%
TOTAL METALS	7.16	6.27%

Notes:

Total in-bag weight = 5.28 + 4.12 + 8.48 + 2.83 + 6.61 + 6.72 + 4.76 + 19.81 + 5.55 + 14.57 + 7.83 + 11.31 + 16.41 = 114.19

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Disposal Services, Inc.

SAMPLE NUMBER 4
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 87.94 LBS.
DATE and TIME 4/3/96
DATE and TIME 4/3/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.45	0.51
MAGAZINES	0.00	0.00
CORRUGATED	7.68	8.73
OTHER PAPERBOARDS	7.55	8.59
BOOKS	0.00	0.00
OFFICE PAPER	13.55	15.41
OTHER	24.33	27.67
TOTAL PAPER	53.56	60.91
ORGANICS		
FOOD	6.03	6.86
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	6.03	6.86
PLASTICS		
PET	15.89	18.07
HDPE	2.00	2.27
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	4.70	5.34
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	2.82	3.21
TOTAL PLASTICS	25.41	28.89
TEXTILES	0.00	0.00
GLASS	0.83	0.94
METALS		
ALUMINUM CANS	1.78	2.02
BI-METAL CANS	0.00	0.00
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.31	0.35
TOTAL METALS	2.09	2.38

Notes:

Total in-bag weight = 6.6 + 18.5 + 23.0 + 2.15 + 8.9 + 2.1 + 26.69 = 87.94

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Disposal Services, Inc.

SAMPLE NUMBER 5
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 172.23 LBS.
DATE and TIME 4/3/96
DATE and TIME 4/3/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	20.26	11.76
MAGAZINES	33.72	19.58
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	11.71	6.80
BOOKS	0.00	0.00
OFFICE PAPER	22.58	13.11
OTHER	22.88	13.28
TOTAL PAPER	111.15	64.54
ORGANICS		
FOOD	1.19	0.69
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	1.19	0.69
PLASTICS		
PET	9.57	5.56
HDPE	9.99	5.80
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.60	0.35
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.41	0.24
TOTAL PLASTICS	20.57	11.94
TEXTILES	1.58	0.92
GLASS	13.92	8.02
METALS		
ALUMINUM CANS	2.88	1.67
BI-METAL CANS	7.54	4.38
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	10.42	6.05

Notes:

Total in-bag weight = 8.72 + 12.97 + 13.87 + 8.80 + 14.51 + 12.64 + 15.41 + 12.42 + 10.00 + 24.85 + 12.94 + 25.10= 172.23

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Disposal Services, Inc.

SAMPLE NUMBER 6
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 161.74 LBS.
DATE and TIME 4/3/96
DATE and TIME 4/3/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	25.80	15.95
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	11.63	7.19
BOOKS	4.10	2.53
OFFICE PAPER	0.00	0.00
OTHER	22.49	13.91
TOTAL PAPER	64.02	39.58
ORGANICS		
FOOD	6.48	4.01
DISPOSABLE DIAPERS	4.30	2.66
YARD & GARDEN WASTE	45.50	28.13
TOTAL ORGANICS	56.28	34.80
PLASTICS		
PET	8.97	5.55
HDPE	3.15	1.95
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	1.60	0.99
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.00	0.00
TOTAL PLASTICS	13.72	8.48
TEXTILES	2.71	1.68
GLASS	6.71	4.15
METALS		
ALUMINUM CANS	3.31	2.05
BI-METAL CANS	5.35	3.31
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	8.66	5.35

Notes:

Total in-bag weight = 7.71 + 12.99 + 9.81 + 9.69 + 7.82 + 24.5 + 12.55 + 14.94 + 9.68 + 1.6 + 8.9 + 5.35 + 15.2 + 21.0 = 161.74

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Greenbrier County Landfill

SAMPLE NUMBER 1
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 54.66 LBS.
DATE and TIME 4/4/96
DATE and TIME 4/4/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	4.80	8.78
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	3.24	5.93
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	5.11	9.35
TOTAL PAPER	13.15	24.06
ORGANICS		
FOOD	10.27	18.79
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	10.27	18.79
PLASTICS		
PET	3.90	7.14
HDPE	0.84	1.54
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.21	0.38
TOTAL PLASTICS	4.94	9.04
TEXTILES	1.40	2.56
GLASS	5.27	9.64
METALS		
ALUMINUM CANS	0.39	0.71
BI-METAL CANS	2.32	4.24
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	12.92	23.64
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	15.63	28.59

Notes:

Total in-bag weight = 7.57 + 8.20 + 13.40 + 5.06 + 5.93 + 3.68 + 10.82 = 54.66

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Greenbrier County Landfill

SAMPLE NUMBER 3
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 79.59 LBS.
DATE and TIME 4/4/96
DATE and TIME 4/4/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	4.86	6.11
MAGAZINES	0.00	0.00
CORRUGATED	6.07	7.63
OTHER PAPERBOARDS	7.35	9.23
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	3.53	4.44
TOTAL PAPER	21.81	27.40
ORGANICS		
FOOD	3.35	4.21
DISPOSABLE DIAPERS	1.27	1.60
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	4.62	5.80
PLASTICS		
PET	3.64	4.57
HDPE	13.33	16.75
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.52	0.65
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.05	0.06
TOTAL PLASTICS	17.54	22.04
TEXTILES	4.15	5.21
GLASS	6.56	8.24
METALS		
ALUMINUM CANS	8.25	10.37
BI-METAL CANS	8.71	10.94
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	16.96	21.31

Notes:

Total in-bag weight = 15.78 + 19.43 + 8.0 + 11.0 + 15.86 + 9.52 = 79.59

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Greenbrier County Landfill

SAMPLE NUMBER 4
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 61.72 LBS.
DATE and TIME 4/4/96
DATE and TIME 4/4/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	1.24	2.01
MAGAZINES	0.00	0.00
CORRUGATED	4.57	7.40
OTHER PAPERBOARDS	5.05	8.18
BOOKS	0.00	0.00
OFFICE PAPER	3.86	6.25
OTHER	8.32	13.48
TOTAL PAPER	23.04	37.33
ORGANICS		
FOOD	5.88	9.53
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.16	0.26
TOTAL ORGANICS	6.04	9.79
PLASTICS		
PET	3.50	5.67
HDPE	14.74	23.88
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.05	0.08
TOTAL PLASTICS	18.29	29.63
TEXTILES	0.44	0.71
GLASS	3.80	6.16
METALS		
ALUMINUM CANS	0.20	0.32
BI-METAL CANS	2.11	3.42
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	2.31	3.74

Notes:

Total in-bag weight = 10.24 + 12.80 + 3.86 + 7.37 + 4.57 + 4.57 + 6.22 + 11.13 + 0.16 + 0.80 = 61.72

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Greenbrier County Landfill

SAMPLE NUMBER 5
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 60.47 LBS.
DATE and TIME 4/4/96
DATE and TIME 4/4/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	1.20	1.98
MAGAZINES	0.00	0.00
CORRUGATED	5.11	8.45
OTHER PAPERBOARDS	4.64	7.67
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	6.91	11.43
TOTAL PAPER	17.86	29.54
ORGANICS		
FOOD	3.05	5.04
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	9.11	15.07
TOTAL ORGANICS	12.16	20.11
PLASTICS		
PET	5.13	8.48
HDPE	3.59	5.94
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.25	0.41
TOTAL PLASTICS	8.97	14.83
TEXTILES	4.91	8.12
GLASS	1.45	2.40
METALS		
ALUMINUM CANS	1.86	3.08
BI-METAL CANS	2.67	4.42
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	4.53	7.49

Notes:

Total in-bag weight = 9.69 + 6.83 + 7.42 + 13.89 + 8.42 + 9.11 + 5.11 = 60.47

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Greenbrier County Landfill

SAMPLE NUMBER 6
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 55.47 LBS.
DATE and TIME 4/4/96
DATE and TIME 4/4/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	2.95	5.32
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	11.45	20.64
BOOKS	9.40	16.95
OFFICE PAPER	0.00	0.00
OTHER	5.30	9.55
TOTAL PAPER	29.10	52.46
ORGANICS		
FOOD	2.11	3.80
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	2.11	3.80
PLASTICS		
PET	2.32	4.18
HDPE	0.80	1.44
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.00	0.00
TOTAL PLASTICS	3.12	5.62
TEXTILES	15.11	27.24
GLASS	1.87	3.37
METALS		
ALUMINUM CANS	0.17	0.31
BI-METAL CANS	0.98	1.77
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	1.15	2.07

Notes:

Total in-bag weight = 6.40 + 18.26 + 3.46 + 14.95 + 12.40 = 55.47

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Nicholas County Landfill

SAMPLE NUMBER 2
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 108.68 LBS.
DATE and TIME 4/5/96
DATE and TIME 4/5/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	6.03	5.55
MAGAZINES	0.00	0.00
CORRUGATED	12.67	11.66
OTHER PAPERBOARDS	3.70	3.40
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	17.45	16.06
TOTAL PAPER	39.85	36.67
ORGANICS		
FOOD	43.74	40.25
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	43.74	40.25
PLASTICS		
PET	8.70	8.01
HDPE	1.21	1.11
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.50	0.46
TOTAL PLASTICS	10.41	9.58
TEXTILES	1.47	1.35
GLASS	1.20	1.10
METALS		
ALUMINUM CANS	0.82	0.75
BI-METAL CANS	0.00	0.00
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	0.82	0.75

Notes:

Total in-bag weight = 7.35 + 3.5 + 19.53 + 8.25 + 8.95 + 3.85 + 7.0 + 50.25 = 108.68

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Nicholas County Landfill

SAMPLE NUMBER 3
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 51.05 LBS.
DATE and TIME 4/5/96
DATE and TIME 4/5/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	4.05	7.93
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	8.05	15.77
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	6.50	12.73
TOTAL PAPER	18.60	36.43
ORGANICS		
FOOD	13.20	25.86
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	13.20	25.86
PLASTICS		
PET	6.69	13.10
HDPE	2.43	4.76
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.35	0.69
TOTAL PLASTICS	9.47	18.55
TEXTILES	0.15	0.29
GLASS	4.70	9.21
METALS		
ALUMINUM CANS	0.90	1.76
BI-METAL CANS	2.80	5.48
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	3.70	7.25

Notes:

Total in-bag weight = 13.6 + 7.0 + 9.15 + 12.0 + 9.3 = 51.05

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Nicholas County Landfill

SAMPLE NUMBER 4 and 5
SAMPLER CSB
CHECKED BY TWQ

SAMPLE WEIGHT 127.56 LBS.
DATE and TIME 4/5/96
DATE and TIME 4/5/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	4.05	3.17
MAGAZINES	0.00	0.00
CORRUGATED	8.20	6.43
OTHER PAPERBOARDS	9.52	7.46
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	9.18	7.20
TOTAL PAPER	30.95	24.26
ORGANICS		
FOOD	10.27	8.05
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	10.27	8.05
PLASTICS		
PET	15.90	12.46
HDPE	5.18	4.06
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.88	0.69
TOTAL PLASTICS	21.96	17.22
TEXTILES	7.60	5.96
GLASS	14.70	11.52
METALS		
ALUMINUM CANS	2.62	2.05
BI-METAL CANS	13.93	10.92
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	3.55	2.78
TOTAL METALS	20.10	15.76

Notes:

Sample 4 & 5 combined weight 127.56 lbs. due to mixing samples

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Nicholas County Landfill

SAMPLE NUMBER 1
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 32.28 LBS.
DATE and TIME 7/15/96
DATE and TIME 7/15/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	3.65	11.31
OTHER PAPERBOARDS	11.29	34.98
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	3.36	10.41
TOTAL PAPER	18.30	56.69
ORGANICS		
FOOD	2.93	9.08
DISPOSABLE DIAPERS	1.00	3.10
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	3.93	12.17
PLASTICS		
PET	6.71	20.79
HDPE	0.03	0.09
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.15	0.46
TOTAL PLASTICS	6.89	21.34
TEXTILES	0.00	0.00
GLASS	2.21	6.85
METALS		
ALUMINUM CANS	0.41	1.27
BI-METAL CANS	0.67	2.08
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	1.08	3.35

Notes:

Total in-bag weight = 13.70 + 4.53 + 7.90 + 2.50 + 3.65 = 32.28

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Nicholas County Landfill

SAMPLE NUMBER 2
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 47.31 LBS.
DATE and TIME 7/15/96
DATE and TIME 7/15/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	6.94	14.67
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	7.56	15.98
TOTAL PAPER	14.50	30.65
ORGANICS		
FOOD	0.00	0.00
DISPOSABLE DIAPERS	0.45	0.95
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	0.45	0.95
PLASTICS		
PET	7.38	15.60
HDPE	1.83	3.87
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.68	1.44
TOTAL PLASTICS	9.89	20.90
TEXTILES	5.17	10.93
GLASS	0.90	1.90
METALS		
ALUMINUM CANS	1.29	2.73
BI-METAL CANS	2.08	4.40
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	3.37	7.12

Notes:

Total in-bag weight = 3.36 + 6.40 + 12.00 + 8.70 + 5.85 + 11.00 = 47.31

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Nicholas County Landfill

SAMPLE NUMBER 3
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 36.16 LBS.
DATE and TIME 7/15/96
DATE and TIME 7/15/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	4.06	11.23
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	9.73	26.91
TOTAL PAPER	13.79	38.14
ORGANICS		
FOOD	0.00	0.00
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	0.00	0.00
PLASTICS		
PET	3.57	9.87
HDPE	6.60	18.25
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.37	1.02
TOTAL PLASTICS	10.54	29.15
TEXTILES	9.00	24.89
GLASS	1.95	5.39
METALS		
ALUMINUM CANS	0.36	1.00
BI-METAL CANS	0.70	1.94
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	1.06	2.93

Notes:

Total in-bag weight = 8.50 + 5.85 + 4.21 + 2.45 + 1515 = 36.16

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Nicholas County Landfill

SAMPLE NUMBER 4
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 12.93 LBS.
DATE and TIME 7/15/96
DATE and TIME 7/15/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	1.27	9.82
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	2.53	19.57
TOTAL PAPER	3.80	29.39
ORGANICS		
FOOD	4.42	34.18
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	4.42	34.18
PLASTICS		
PET	1.81	14.00
HDPE	0.50	3.87
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.10	0.77
TOTAL PLASTICS	2.41	18.64
TEXTILES	0.00	0.00
GLASS	0.83	6.42
METALS		
ALUMINUM CANS	0.96	7.42
BI-METAL CANS	0.96	7.42
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	1.92	14.85

Notes:

Total in-bag weight = 5.25 + 1.63 + 6.05 = 12.93

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Greenbrier County Landfill

SAMPLE NUMBER 1
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 32.81 LBS.
DATE and TIME 7/16/96
DATE and TIME 7/16/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	5.20	15.85
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	0.20	0.61
TOTAL PAPER	5.40	16.46
ORGANICS		
FOOD	10.20	31.09
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	10.20	31.09
PLASTICS		
PET	1.65	5.03
HDPE	4.23	12.89
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.30	0.91
TOTAL PLASTICS	6.18	18.84
TEXTILES	0.00	0.00
GLASS	1.73	5.27
METALS		
ALUMINUM CANS	1.03	3.14
BI-METAL CANS	0.50	1.52
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	1.53	4.66

Notes:

Total in-bag weight = 5.87 + 8.27 + 9.17 +9.5 = 32.81

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Greenbrier County Landfill

SAMPLE NUMBER 2
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 34.88 LBS.
DATE and TIME 7/16/96
DATE and TIME 7/16/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	5.85	16.77
OTHER PAPERBOARDS	3.30	9.46
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	11.83	33.92
TOTAL PAPER	20.98	60.15
ORGANICS		
FOOD	3.08	8.83
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	3.08	8.83
PLASTICS		
PET	3.75	10.75
HDPE	1.20	3.44
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	1.75	5.02
TOTAL PLASTICS	6.70	19.21
TEXTILES	0.10	0.29
GLASS	2.10	6.02
METALS		
ALUMINUM CANS	0.71	2.04
BI-METAL CANS	0.90	2.58
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	1.61	4.62

Notes:

Total in-bag weight = 8.78 + 3.45 + 3.35 + 2.90 + 7.60 + 8.80 = 34.88

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Greenbrier County Landfill

SAMPLE NUMBER 3
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 48.52 LBS.
DATE and TIME 7/16/96
DATE and TIME 7/16/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	3.67	7.56
BOOKS	0.00	0.00
OFFICE PAPER	19.40	39.98
OTHER	0.00	0.00
TOTAL PAPER	23.07	47.55
ORGANICS		
FOOD	0.00	0.00
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	0.00	0.00
PLASTICS		
PET	4.10	8.45
HDPE	1.60	3.30
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.30	0.62
TOTAL PLASTICS	6.00	12.37
TEXTILES	0.90	1.85
GLASS	3.00	6.18
METALS		
ALUMINUM CANS	0.23	0.47
BI-METAL CANS	5.75	11.85
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	5.98	12.32

Notes:

Total in-bag weight = 8.48 + 7.42 + 3.51+ 11.6 + 17.51 = 48.52

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Greenbrier County Landfill

SAMPLE NUMBER: 4
SAMPLER: CSB
CHECKED BY: JKW

SAMPLE WEIGHT: 51.57 LBS.
DATE and TIME: 7/16/96
DATE and TIME: 7/16/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	1.73	3.35
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	13.98	27.11
TOTAL PAPER	15.71	30.46
ORGANICS		
FOOD	7.55	14.64
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	7.55	14.64
PLASTICS		
PET	5.25	10.18
HDPE	0.40	0.78
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	2.50	4.85
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.43	0.83
TOTAL PLASTICS	8.58	16.64
TEXTILES	12.75	24.72
GLASS	3.30	6.40
METALS		
ALUMINUM CANS	0.90	1.75
BI-METAL CANS	1.98	3.84
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.25	0.48
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	3.13	6.07

Notes:

Total in-bag weight = 16.45 + 3.0 + 19.0 + 5.8 + 7.57 = 51.57

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME: Waste Characterization Study
PROJECT NUMBER: 95-569-01
LANDFILL: Greenbrier County Landfill

SAMPLE NUMBER: 5
SAMPLER: CSB
CHECKED BY: JKW

SAMPLE WEIGHT: 67.88 LBS.
DATE and TIME: 7/16/96
DATE and TIME: 7/16/97

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	10.10	14.88
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	14.91	21.97
TOTAL PAPER	25.01	36.84
ORGANICS		
FOOD	15.50	22.83
DISPOSABLE DIAPERS	0.20	0.29
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	15.70	23.13
PLASTICS		
PET	5.00	7.37
HDPE	2.70	3.98
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.23	0.34
TOTAL PLASTICS	7.93	11.68
TEXTILES	5.70	8.40
GLASS	4.50	6.63
METALS		
ALUMINUM CANS	0.75	1.10
BI-METAL CANS	2.93	4.32
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	3.68	5.42

Notes:

Total in-bag weight = 15.3 + 7.55 + 14.85 + 9.88 + 7.2 + 4.95 + 8.15 = 67.88

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Greenbrier County Landfill

SAMPLE NUMBER 6
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 47.85 LBS.
DATE and TIME 7/16/96
DATE and TIME 7/16/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	5.05	10.55
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	9.85	20.59
TOTAL PAPER	14.90	31.14
ORGANICS		
FOOD	15.58	32.56
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	15.58	32.56
PLASTICS		
PET	5.50	11.49
HDPE	1.23	2.57
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.50	1.04
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.30	0.63
TOTAL PLASTICS	7.53	15.74
TEXTILES	0.00	0.00
GLASS	2.65	5.54
METALS		
ALUMINUM CANS	0.55	1.15
BI-METAL CANS	4.53	9.47
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	5.08	10.62

Notes:

Total in-bag weight = 8.25 + 11.60 + 11.30 + 11.00 + 5.70 = 47.85

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Disposal Services

SAMPLE NUMBER 1
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 77.05 LBS.
DATE and TIME 7/17/96
DATE and TIME 7/17/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	9.85	12.78
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	27.66	35.90
TOTAL PAPER	37.51	48.68
ORGANICS		
FOOD	5.01	6.50
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	5.01	6.50
PLASTICS		
PET	9.95	12.91
HDPE	1.15	1.49
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.10	0.13
TOTAL PLASTICS	11.20	14.54
TEXTILES	8.60	11.16
GLASS	2.40	3.11
METALS		
ALUMINUM CANS	1.75	2.27
BI-METAL CANS	2.90	3.76
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	4.65	6.04

Notes:

Total in-bag weight = 13.4 + 8.7 + 8.5 + 5.7 + 4.65 + 6.8 + 6.7 + 31.1 = 77.05

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Disposal Services

SAMPLE NUMBER 2
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 46.95 LBS.
DATE and TIME 7/17/96
DATE and TIME 7/17/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	3.35	7.14
OTHER PAPERBOARDS	6.46	13.76
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	10.05	21.41
TOTAL PAPER	19.86	42.30
ORGANICS		
FOOD	9.96	21.21
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	9.96	21.21
PLASTICS		
PET	8.82	18.79
HDPE	0.00	0.00
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.55	1.17
TOTAL PLASTICS	9.37	19.96
TEXTILES	0.43	0.92
GLASS	2.95	6.28
METALS		
ALUMINUM CANS	1.85	3.94
BI-METAL CANS	0.41	0.87
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	2.26	4.81

Notes:

Total in-bag weight = 6.95 + 6.45 + 10.40 + 9.50 + 4.55 + 9.10 = 46.95

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Disposal Services

SAMPLE NUMBER 3
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 53.70 LBS.
DATE and TIME 7/17/96
DATE and TIME 7/17/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	6.78	12.63
BOOKS	0.00	0.00
OFFICE PAPER	10.75	20.02
OTHER	0.00	0.00
TOTAL PAPER	17.53	32.64
ORGANICS		
FOOD	0.00	0.00
DISPOSABLE DIAPERS	7.10	13.22
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	7.10	13.22
PLASTICS		
PET	3.40	6.33
HDPE	2.93	5.46
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.25	0.47
TOTAL PLASTICS	6.58	12.25
TEXTILES	4.70	8.75
GLASS	9.50	17.69
METALS		
ALUMINUM CANS	1.11	2.07
BI-METAL CANS	3.81	7.09
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	1.55	2.89
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	6.47	12.05

Notes:

Total in-bag weight = 8.9 + 12.45 + 10.15 + 8.65 + 13.55 = 53.70

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Disposal Services

SAMPLE NUMBER 4
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 41.00 LBS.
DATE and TIME 7/17/96
DATE and TIME 7/17/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	3.86	9.41
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	12.79	31.20
TOTAL PAPER	16.65	40.61
ORGANICS		
FOOD	6.55	15.98
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	9.00	21.95
TOTAL ORGANICS	15.55	37.93
PLASTICS		
PET	3.95	9.63
HDPE	0.00	0.00
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.65	1.59
TOTAL PLASTICS	4.60	11.22
TEXTILES	0.66	1.61
GLASS	0.55	1.34
METALS		
ALUMINUM CANS	0.40	0.98
BI-METAL CANS	0.10	0.24
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.12	0.29
TOTAL METALS	0.62	1.51

Notes:

Total in-bag weight = 14.75 + 12.80 + 7.15 + 6.30 = 41.00

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Disposal Services

SAMPLE NUMBER 5
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 24.25 LBS.
DATE and TIME 7/17/96
DATE and TIME 7/17/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	1.11	4.58
OTHER PAPERBOARDS	0.00	0.00
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	19.04	78.52
TOTAL PAPER	20.15	83.09
ORGANICS		
FOOD	0.00	0.00
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	0.00	0.00
PLASTICS		
PET	2.40	9.90
HDPE	0.15	0.62
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.10	0.41
TOTAL PLASTICS	2.65	10.93
TEXTILES	0.40	1.65
GLASS	0.00	0.00
METALS		
ALUMINUM CANS	1.35	5.57
BI-METAL CANS	0.20	0.82
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	1.55	6.39

Notes:

Total in-bag weight = 4.0 + 15.5 + 4.75 = 24.25

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Disposal Services

SAMPLE NUMBER 6
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 32.95 LBS.
DATE and TIME 7/17/96
DATE and TIME 7/17/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	0.80	2.43
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	9.25	28.07
TOTAL PAPER	10.05	30.50
ORGANICS		
FOOD	4.86	14.75
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	4.86	14.75
PLASTICS		
PET	10.38	31.50
HDPE	0.40	1.21
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.35	1.06
TOTAL PLASTICS	11.13	33.78
TEXTILES	0.00	0.00
GLASS	5.26	15.96
METALS		
ALUMINUM CANS	0.20	0.61
BI-METAL CANS	1.25	3.79
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	1.45	4.40

Notes:

Total in-bag weight = 9.35 + 8.45 + 15.15 = 32.95

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Charleston Landfill

SAMPLE NUMBER 1
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 53.80 LBS.
DATE and TIME 7/19/96
DATE and TIME 7/19/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	3.35	6.23
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	12.48	23.20
TOTAL PAPER	15.83	29.42
ORGANICS		
FOOD	22.11	41.10
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	22.11	41.10
PLASTICS		
PET	4.10	7.62
HDPE	2.40	4.46
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.10	0.19
TOTAL PLASTICS	6.60	12.27
TEXTILES	0.00	0.00
GLASS	4.50	8.36
METALS		
ALUMINUM CANS	0.85	1.58
BI-METAL CANS	0.31	0.58
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	1.16	2.16

Notes:

Total in-bag weight = 20.35 + 4.4 + 18.9 + 1.8 + 8.35 = 53.80

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Charleston Landfill

SAMPLE NUMBER 2
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 72.65 LBS.
DATE and TIME 7/19/96
DATE and TIME 7/19/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	5.48	7.54
OTHER PAPERBOARDS	1.51	2.08
BOOKS	0.00	0.00
OFFICE PAPER	6.50	8.95
OTHER	18.63	25.64
TOTAL PAPER	32.12	44.21
ORGANICS		
FOOD	1.50	2.06
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	1.50	2.06
PLASTICS		
PET	4.75	6.54
HDPE	0.05	0.07
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	18.70	25.74
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	1.60	2.20
TOTAL PLASTICS	25.10	34.55
TEXTILES	0.10	0.14
GLASS	3.20	4.40
METALS		
ALUMINUM CANS	1.95	2.68
BI-METAL CANS	0.10	0.14
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	1.90	2.62
TOTAL METALS	3.95	5.44

Notes:

Total in-bag weight = 16.35 + 22.0 + 6.5 + 13.4 + 9.0 + 5.4 = 72.65

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Charleston Landfill

SAMPLE NUMBER 3
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 44.72 LBS.
DATE and TIME 7/19/96
DATE and TIME 7/19/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	2.43	5.43
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	5.65	12.63
TOTAL PAPER	8.08	18.07
ORGANICS		
FOOD	1.70	3.80
DISPOSABLE DIAPERS	0.00	0.00
YARD & GARDEN WASTE	20.75	46.40
TOTAL ORGANICS	22.45	50.20
PLASTICS		
PET	3.30	7.38
HDPE	1.06	2.37
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.20	0.45
TOTAL PLASTICS	4.56	10.20
TEXTILES	0.00	0.00
GLASS	3.95	8.83
METALS		
ALUMINUM CANS	1.70	3.80
BI-METAL CANS	0.60	1.34
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	2.30	5.14

Notes:

Total in-bag weight = 13.32 + 20.75 + 6.15 + 4.5 = 44.72

WASTE STREAM CHARACTERIZATION SAMPLING FORM

PROJECT NAME Waste Characterization Study
PROJECT NUMBER 95-569-01
LANDFILL Charleston Landfill

SAMPLE NUMBER 4
SAMPLER CSB
CHECKED BY JKW

SAMPLE WEIGHT 49.75 LBS.
DATE and TIME 7/19/96
DATE and TIME 7/19/96

CATEGORIES	TOTAL WEIGHT (lbs)	PERCENT (%)
PAPER		
NEWSPAPER	0.00	0.00
MAGAZINES	0.00	0.00
CORRUGATED	0.00	0.00
OTHER PAPERBOARDS	2.35	4.72
BOOKS	0.00	0.00
OFFICE PAPER	0.00	0.00
OTHER	10.05	20.20
TOTAL PAPER	12.40	24.92
ORGANICS		
FOOD	12.45	25.03
DISPOSABLE DIAPERS	9.25	18.59
YARD & GARDEN WASTE	0.00	0.00
TOTAL ORGANICS	21.70	43.62
PLASTICS		
PET	3.15	6.33
HDPE	0.05	0.10
COMMERCIAL PLASTICS	0.00	0.00
OTHER - RIGID	0.00	0.00
OTHER - FLEXIBLE	0.00	0.00
STYROFOAM	0.48	0.96
TOTAL PLASTICS	3.68	7.40
TEXTILES	2.30	4.62
GLASS	5.90	11.86
METALS		
ALUMINUM CANS	0.31	0.62
BI-METAL CANS	3.36	6.75
FERROUS/TINNED CANS	0.00	0.00
OTHER FERROUS	0.00	0.00
OTHER NON-FERROUS	0.00	0.00
TOTAL METALS	3.67	7.38

Notes:

Total in-bag weight = 17.8 + 9.15 + 12.35 + 8.15 +2.30 = 49.75

APPENDIX C

Photograph 1. Workers putting on Personal Protective Equipment (PPE).

Photograph 2. Platform scale and triple beam balance were calibrated before sampling began.

Photograph 3. Workers assembled the sorting table.

Photograph 4. Various equipment used in staging area..

Photograph 5. Samples were randomly selected from incoming MSW.

Photograph 6. Samples were weighed (in bag weight) and documented.

Photograph 7. Sample bags were cut open.

Photograph 8. Samples were scattered onto the sorting table.

Photograph 9. Sample were sorted into different categories.

Photograph 10. Sorted samples were weighed and documented.

APPENDIX D

SUBJECT Waste Characterization Study
Population Density Calc.

BY CSB DATE 9/12/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 1-20-97 SHEET NO. 1 OF 2

gai CONSULTANTS, IN
Engineers • Geologists • Planners
Environmental Specialists

This calculation is to estimate the population density for Wasteshed F and H.

Populations per 1990 Census:

Wasteshed F = 81,205 people

Wasteshed H = 527,384 people

Area of wastesheds per WV Blue Book:

Wasteshed F

Greenbrier	=	1022.80
Nicholas	=	656.77
Webster	=	558.60
Pocahontas	=	942.61
Total	=	3180.78 sq. miles

Wasteshed H

Logan	=	455.82
Boone	=	506.00
Lincoln	=	437.04
Wayne	=	517.88
Cabell	=	285.95
Kanawha	=	913.38
Putnam	=	350.57
Mason	=	445.75
Roane	=	486.20
Calhoun	=	280.20
Total	=	4678.79 sq. miles

SUBJECT Population Density Calc.

BY CSB DATE 9/12/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 1-20-97 SHEET NO. 2 OF 2

GAI CONSULTANTS, INC
Engineers • Geologists • Planners
Environmental Specialists

Density:

Wasteshed $F = \frac{81205}{3180.78} = 25.5$ people per sq. mile

Wasteshed $H = \frac{527384}{4678.79} = 112.7$ people per sq. mile.

SUBJECT Waste Characterization Study
Ave. In-Bag Weight

BY CSB DATE 9/12/96 PROJ. NO. 95-569-01

CHKD. BY JKW DATE 9/12/96 SHEET NO. 1 OF 3

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This calc is to determine the average per bag weight observed during field sampling.

Data comes from the Waste Characterization Sampling Forms

Greenbrier:

Summer--

Sample 1	4 bags @ 32.81 lbs =	
Sample 2	6 bags @ 34.88 lbs =	
Sample 3	5 bags @ 48.52 lbs =	
Sample 4	5 bags @ 51.57 lbs =	
Sample 5	7 bags @ 67.88 lbs =	
Sample 6	5 bags @ 47.85 lbs =	
Total	32 bags @ 283.51 lbs =	8.86 lbs

Winter--

Sample 2	7 bags @	54.66 lbs =
Sample 3	6 bags @	77.59 lbs =
Sample 4	10 bags @	61.72 lbs =
Sample 5	7 bags @	60.47 lbs =
Sample 6	5 bags @	55.47 lbs =
Total	35 bags @ 311.91 lbs =	8.91 lbs/bag

Nicholas:

Summer--

Sample 1	5 bags @	32.28 lbs
Sample 2	6 bags @	47.31 lbs
Sample 3	5 bags @	36.16 lbs
Sample 4	3 bags @	12.93 lbs
Total	19 bags @ 128.68 lbs =	6.77 lb/bag

SUBJECT Ave. In-Bag Weight

BY CSB DATE 9/12/96 PROJ. NO. 95-569-01

CHKD. BY JKW DATE 9/12/96 SHEET NO. 2 OF 3

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Winter – Sample 2 — 8 bags @ 108.68 lbs
Sample 3 — 5 bags @ 51.05 lbs.
Sample 4 — 6 bags @ 82.75 lbs.
Sample 5 — Not taken per Bag.

Total — 19 bags @ 242.48 = 12.76 lb/bag

Charleston:

Summer – Sample 1 — 5 bags @ 53.80 lbs
Sample 2 — 6 bags @ 72.65 lbs
Sample 3 — 4 bags @ 44.72 lbs
Sample 4 — 5 bags @ 49.75 lbs

Total — 20 bags @ 220.92 lbs = 11.05 lbs/bag

Winter – Sample 2 — 10 bags @ 93.79 lbs
Sample 4 — 13 bags @ 114.19 lbs

Total — 23 bags @ 207.98 lbs = 9.04 lb/bag

Disposal Services:

Summer – Sample 1 — 8 bags @ 77.05 lbs
Sample 2 — 6 bags @ 46.95 lbs
Sample 3 — 5 bags @ 53.70 lbs
Sample 4 — 4 bags @ 41.0 lbs
Sample 5 — 3 bags @ 24.25 lbs
Sample 6 — 3 bags @ 32.95 lbs

Total — 29 bags @ 275.90 lbs = 9.51 lb/bag

SUBJECT Ave. In-Bag Weight

BY CSB DATE 9/12/96 PROJ. NO. 95-569-01

CHKD. BY JKW DATE 9/12/96 SHEET NO. 3 OF 3

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Winter — Sample 4 Incomplete on Bag Weight.
Sample 5 12 bags @ 172.23 lbs.
Sample 6 14 bags @ 161.74 lbs

Total 26 bags @ 333.97 lbs = 12.85 lbs/bag

Waste Shed F
Nicholas:
Summer 19 bags @ 128.68 lbs
Winter 19 bags @ 245.48 lbs

Greenbrier:
Summer 32 bags @ 283.51 lbs
Winter 35 bags @ 311.91 lbs

Total 105 bags (OK) @ 969.58 lbs = 9.23 lbs/bag

Waste shed H
Charleston:
Summer 20 bags @ 220.92 lbs
Winter 23 bags @ 207.98 lbs

Disposal:
Summer 29 bags @ 275.90 lbs
Winter 26 bags @ 333.97 lbs

Total 98 bags @ 1038.77 lbs = 10.60

Both = $\frac{969.58 + 1038.77}{105 + 98} = \frac{2008.35}{203} = 9.89 \frac{lbs}{bag}$

SUBJECT Per Capita Generation Rate
Method 1

BY CSB DATE 8/26/96 PROJ. NO. 95-569-01
CHKD. BY JSG DATE 1/6/96 SHEET NO. 1 OF 2

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This calculation is to estimate the per capita generation of Waste in West Virginia.

The quanity of waste landfilled in WV in the following years:

Waste Shed	Year	Tons of Waste In Shed	Out Shed	Total
F	1993①	53410	267	53677
	1994①	48283	1694	49977
	1995②	—	—	—
H	1993①	518091	83825	601916
	1994①	416854	60175	477029
	1995②	—	—	—

① Information per "The 1994 Solid Waste Update
② Not Available at date of study.

Population of:

Waste Shed F = 81,205 per US Census Bureau, 1990
Waste Shed H = 527,384 per US Census Bureau, 1990

The per capita waste generation for each waste shed during the particular year is as follows:

Waste Shed	Year	In Shed Per Capita
F	1993	$\frac{51693 \text{ tons}}{\text{year}} \mid \frac{2000 \text{ lb}}{1 \text{ ton}} \mid \frac{}{81205 \text{ persons}} \mid \frac{1 \text{ year}}{365 \text{ days}} =$

3.49 lb/

SUBJECT Per Capita Generation Rate
Method 1

BY CSB DATE 8/26/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 1/6/96 SHEET NO. 2 OF 2

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Waste Shed	Year	In Shed Per Capita
F	1994	$\frac{52638 \mid 2000 \mid 1}{1 \mid 81205 \mid 365} = 3.55$ lb/person per day
H	1993	$\frac{434265 \mid 2000 \mid 1}{1 \mid 527384 \mid 365} = 4.51$ lb/person per day
	1994	$\frac{442430 \mid 2000 \mid 1}{1 \mid 527384 \mid 365} = 4.60$ lb/person per day

SUBJECT Waste Characterization Study
Customers per Waste shed

BY CSB DATE 12/4/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 12/12/96 SHEET NO. 1 OF 3

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Reference: CSB 12/4/96 calc.

Waste Shed F

	Residential	Commercial
Greenbrier Co.	5290	360
Nicholas Co.	5669	495
Pocahontas Co.	3800	100
Webster Co.	2140	128
[1] Lewisburg	1064	152
[3] Rainelle	542	162
[2] Roncevert	715	85
[1] White Sulphur Springs	1109	191
[3] Richwood	1604	127
[1] Marlington	465	85
[2] Durbin	192	—
Total	22590	1885

1- Use phone memo data in proportions per PSC list.
2- Use phone memo data
3- Use PSC list

SUBJECT Waste Characterization Study
Customers per Waste Shed

BY CSB DATE 12/4/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 12/12/96 SHEET NO. 2 OF 3

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Waste Shed H

	Residential	Commercial
Cabell Co.	10291	743
Calhoun Co.	* —	—
Boone Co.	19612 4533 —	908 205 2005
Kanawha Co.	25073 4851 10048	2224 60 509
Lincoln Co.	* —	—
Logan Co.	4287	718
Mason Co.	2000	80
Putnam Co.	* —	—
Roane Co.	347	3
Wayne Co.	* —	—
Fayette Co.	—	88

* customers included in other county number of customers.

NOTE: THIS PAGE LISTS COMMERCIAL HAULERS

SUBJECT Waste Characterization Study
Customers per waste shed.

BY CSB DATE 12/4/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 12/12/96 SHEET NO. 3 OF 3

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cont.
Waste Shed H

	Residential	Commercial
2 St. Albans	5300	350
2 Marmet	785	15
2 Nitro	2750	300
2 Charleston	23278	—
2 Smithers	555	28
2 Montgomery	540	—
2 Barboursville	1268	110
2 Madison	850	55
2 South Charleston	6200	480
2 Cedar Grove	560	—
3 Dunbar	3300	200
2 Whitesville	262	20
2 Chapmanville	525	102
2 Logan	900	250
2 West Logan	200	12
2 Chesapeake	810	—
2 Belle	650	10
Total	129775	9475

1 - Use phone memo data in proportions per PSC list.
2 - Use phone memo data
3 - Use PSC list

NOTE! THIS PAGE LIST MUNICIPALITIES [illegible] HAUL THEIR OWN TRASH.

SUBJECT Waste Characterization Study

BY CSB DATE 12/4/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 12/12/96 SHEET NO. 1 OF 1

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Customer from Phone Memos in Wasteshed F

Municipality	Residential	Commercial
Alderson	Picked up by Greenbrier Valley Solid Waste.	
Marlington	550*	
Richwood	1500	150
Lewisburg	1216*	
Rainelle	Unsure of customers served.	
Ronceverte	715	85
White Sulphur Springs	1300*	
Durbin	192	—
Summersville	Picked up by Nicholas Sanitation	

* Includes residential and commercial customers.

SUBJECT Waste Characterization Study

BY CSB DATE 12/3/96 PROJ. NO. 95-596-01

CHKD. BY JSG DATE 12/12/96 SHEET NO. 1 OF 2

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Customers from Phone Memos in Wasteshed H

Municipality	Residential	Commercial
St. Albans	5300	350
Marmet	785	15
Nitro	2750	300
Charleston	23278	—
Huntington	NA	NA
Smithers	555	28
Montgomery	540	—
Barboursville	1268	110
Madison	850	55
South Charleston	6200	480
Cedar Grove	560	—
* Dunbar	3300	200
* Whitesville	262	20
Chapmanville	525	102
Logan	900	250

SUBJECT Waste Characterization Study

BY CSB DATE 12/4/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 12/12/96 SHEET NO. 2 OF 2

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cont.

Customers from Phone Memos in Wasteshed H

Municipality	Residential	Commercial
West Logan	200	12
Chesapeake	810	—
Belle	650	10
CEREDO	NA	NA
KENOVA	NA	NA
WAYNE	NA	NA
POINT PLEASANT	NA	NA
NEW HAVEN	NA	NA
RAVENWOOD	NA	NA
RIPLEY	NA	NA
GRANTSVILLE	NA	NA

* - Taken from PSC list due to inadequate information from person spoken too.

NA - Waste disposed of out of wasteshed.

SUBJECT Waste Characterization Study
Waste Shed F

BY CSB DATE 12/2/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 12/2/96 SHEET NO. 1 OF 1
12/4/96

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Landfill	April	July
Greenbrier Co.		
Residential	—	—
Commercial	1875.60 tons	2389.09 tons
Total	1875.60 tons	2389.09 tons
Nicholas Co.		
Residential	—	—
Commercial	1150 tons	1415 tons
Total	1150 tons	1415 tons
Pocahontas Co.		
Residential	392.31 tons	256.03 tons
Commercial	285.74 tons	338.69 tons
Total	678.05 tons	594.72 tons
Webster Co.		
Residential	297 tons	256.18 tons
Commercial	124 tons	106.75 tons
Total	421 tons	362.93 tons
Waste Shed F Grand Total	4124.65 tons	4761.74 tons

SUBJECT Waste Characterization Study
Waste Shed H

BY CSB DATE 12/2/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 12/3/96 SHEET NO. 1 OF 1

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Landfill	April	July
Sycamore		
Residential	2583.57 tons	2751.3 tons
Commercial	2685.62 tons	2487.43 tons
Total	5269.19 tons	5238.73 tons
Charleston		
Residential	3677.37 tons	3918.66 tons
Commercial	7408.69 tons	9500.86 tons
Total	11086.06 tons	13419.52 tons
Disposal		
Residential	3620.42 tons	2441.51 tons
Commercial	6904.14 tons	7979.95 tons
Total	10524.56 tons	10421.46 tons
Wasteshed H Grand Total	26879.81 tons	29079.71 tons

SUBJECT Waste Characterization Study
Waste Shed F Customers by PSC Hauler Data

BY CSB DATE 12/2/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 12/12/96 SHEET NO. 1 OF 2

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Source: PSC Hauler Data List, Dated 7-7-95

Webster Co.

Haulers to Webster Co. Landfill:

Hauler	Customers Residential	Commercial
Martin Sanitation	1130	65
Smalley Sanitation	1010	63
Total	2140	128

Pocahontas Co.

Haulers to Pocahontas Co. Landfill:

Hauler	Customers Residential	Commercial
* County Disposal Service	300	100
* Solid Waste Auth.	3500	—
Total	3800	100

* No customers listed, customers per CSB phone memo dated 12/3/96 with Mary Boils.

* Customers per CSB 12/3/96 phone memo with solid waste authority.

SUBJECT Waste Characterization Study
Wasteshed F Customers by PSC Hauler Data
BY CSB DATE 12/2/96 PROJ. NO. 95-569-01
CHKD. BY JSG DATE 12/12/96 SHEET NO. 2 OF 2

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Nicholas Co.

Haulers to Nicholas Co. Landfill:

Hauler	Customers: Residential	Commercial
Nicholas Sanitation	3420	434
Western Greenbrier Disposal	2249	61
Total	5669	495

Greenbrier Co.

Haulers to Greenbrier Co. Landfill:

Hauler	Customers: Residential	Commercial
Greenbrier Valley Solid Waste	3297	304
Western Greenbrier Disposal	1993	56
Total	5290	360

SUBJECT Waste Characterization Study
Waste Shed H Customers by PSC Hauler Data

BY CSB DATE 12/2/96 PROJ. NO. 95-569-01

CHKD. BY SSG DATE 12/12/96 SHEET NO. 1 OF 8

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Source: PSC Hauler Data List, dated 7-7-95

Cabell Co.

Haulers to Sycamore Landfill

Hauler	Customers Residential	Commercial
*Browning-Ferris	938	538
General Refuse	9353	205
Total	10291	743

* customers approximated based on CSB 12/3/96 Phone memo with Dave Linville.

Calhoun Co.

Haulers to Charleston Landfill

Hauler	Customers Residential	Commercial
Mountaineer Waste System	See *	See *

Mountaineer Waste customers is listed as a total served which includes other areas. Mountaineer Customer in Calhoun Co. are included with Boone Co.

SUBJECT Waste Characterization Study
Waste shed H Customers by PSC/Hauler Data
BY CSB DATE 12/2/96 PROJ. NO. 95-569-01
CHKD. BY JSG DATE 12/12/96 SHEET NO. 2 OF 8

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Boone Co.

Haulers to Charleston Landfill

Hauler	Customers: Residential	Commercial
Mountaineer Waste System	19612	908
Total	19612	908

Haulers to Sycamore Landfill

Hauler	Customers: Residential	Commercial
L+S Sanitation	4533	205
Total	4533	205

Hauler to Dons Disposal

Hauler	Customers: Residential	Commercial
*Dons Disposal	—	2005
Total	—	2005

* Also hauls to Charleston and Sycamore

SUBJECT Waste Characterization Study
Wasteshed H Customers by PSC Hauler Data
BY CSB DATE 12/3/96 PROJ. NO. 95-569-01
CHKD. BY SSG DATE 12/12/96 SHEET NO. 3 OF 8

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Kanawha Co.

Haulers to Charleston Landfill

Hauler	Customers Residential	Commercial
* Commercial Disposal	—	438
*' Mountaineer Waste Systems	19479	1600
Figgate Hauling	675	—
Hancock Garbage	3262	115
Hizer Trucking	1307	71
LE Disposal	350	—
Total	25073	2224

Haulers to Sycamore Landfill

Hauler	Customers Residential	Commercial
Cross-Tyler Trash	3486	60
Harris Disposal	1365	—
L+S Sanitation	Customers accounted for on Boone Co.	
Total	4851	60

SUBJECT Waste Characterization Study
Wasteshed H Customers by PSC Hauler Data
BY CSB DATE 12/3/96 PROJ. NO. 95-569-01
CHKD. BY JSG DATE 12/12/96 SHEET NO. 4 OF 8

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Haulers to Disposal Services Landfill

Hauler	Customers Residential	Commercial
Cummings Collection	8598	509
West Side Sanitation	1450	—
Total	10048	509

* Hauls to Sycamore Landfill and Disposal Services
1 Customers are others than reported on Boone Co.; separate certificate numbers.

Lincoln Co.

Hauler to Sycamore Landfill

Hauler	Customers Residential	Commercial
L&S Sanitation	Customers listed	under Boone Co.

SUBJECT Waste Characterization Study
Wasteshed H Customers by PSC Hauler Data
BY CSB DATE 12/3/96 PROJ. NO. 95-569-01
CHKD. BY JSG DATE 12/12/96 SHEET NO. 5 OF 8

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Logan Co.

Haulers

Hauler	Customers: Residential	Customers: Commercial
Guyan Transfer	3330	150
Big Valley	—	66
Vance Sanitation	957	5
B+E Cartage	—	—
M-L Commercial	—	497
Mountaineer Waste	Customers listed under Boone Co.	
Total	4287	718

SUBJECT Waste Characterization Study
Wasteshed H Customers by PSC Hauler Data
BY CSB DATE 12/3/96 PROJ. NO. 95-569-01
CHKD. BY JSG DATE 12/12/96 SHEET NO. 6 OF 8

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Mason Co.

Haulers

Hauler	Customers: Residential	Commercial
Don's Disposal	Customers listed under Boone Co.	
Archie Vaughan	2000	80
Total	2000	80

Putnam Co.

Haulers

Hauler	Customers: Residential	Commercial
Cummings Collection	Customers listed under other county	
Don's Disposal	'	'
Harris Disposal	'	'
Archie Vaughan	'	'

SUBJECT Waste Characterization Study
Watershed H Customers by PSC Hauler Data
BY CSB DATE 12/3/96 PROJ. NO. 95-569-01
CHKD. BY JSG DATE 12/12/96 SHEET NO. 7 OF 8

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Roane Co.

Haulers

Hauler	Customers: Residential	Customers: Commercial
Mountaineer Waste Systems	Customers listed under Boone Co.	
Hizer Trucking	347	3
Total	347	3

Wayne Co.

Haulers

Hauler	Customers: Residential	Customers: Commercial
Browning-Ferris	Customers listed under Cabell Co.	
Dalton Brothers Garbage	Hauls to Ky.	
Industrial & Residential Sanitation Service	— *	— *
Mills Garbage	— *	— *
Total	—	—

* No customers due to out of business

SUBJECT Waste Characterization Study
Watershed H Customers by PSC Hauler Data
BY CSB DATE 12/3/96 PROJ. NO. 95-569-01
CHKD. BY JSG DATE 12/12/96 SHEET NO. 8 OF 8

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Fayette Co.

Haulers

Hauler	Customers: Residential	Customers: Commercial
Mountaineer Waste System	Customers listed under Boone Co.	
Hancock Garbage	Customers listed under Kanawha Co.	
✱ L.E. Disposal	—	88
Total	—	88

✱ per CSB 12/3/96 Phone Memo with Pete Lopez of LE Disposal

SUBJECT Waste Characterization Study
Wasteshed F Customer Estimate.

BY CSB DATE 12/2/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 1-20-97 SHEET NO. 1 OF 4

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Greenbrier Co.

*Municipalities:

	April	July
Town of Alderson		X
City of Lewisburg	X	X
Town of Rainelle	X	X
City of Ronceverte	X	X
City of White Sulphur Springs	X	X

* per tonnage sheets X- waste reported on tonnage sheet.

The PSC list dated 5/29/92 lists Lewisburg, Rainelle, Ronceverte, and White Sulphur Springs with trash service.

SUBJECT Waste Characterization Study
Waste Shed F Customer Estimate

BY CSB DATE 12/2/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 1-20-97 SHEET NO. 2 OF 4

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Nicholas Co.

* Municipalities:

	April	July
Richwood	X	X
Summersville	X	X

* per tonnage sheet X- waste reported on tonnage sheet.

The PSC list dated 5/29/92 lists Richwood with trash service.

SUBJECT Waste Characterization Study
Waste Shed F Customer Estimate

BY CSB DATE 12/2/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 1-20-97 SHEET NO. 3 OF 4

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Webster Co.
* Municipalities:
None

* per tonnage sheet

The PSC list dated 5/29/92 has no listing of Municipalities in Webster Co. with trash service.

SUBJECT Waste Characterization Study
Waste shed F Customer Estimation

BY CSB DATE 12/2/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 1-20-97 SHEET NO. 4 OF 4

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Pocahontas Co.

* Municipalities:
  - Marlington
  - Durbin

April	July
X	X
X	X

* per tonnage sheet

X- waste reported on tonnage sheet

The PSC list dated 5/29/96 lists Marlington with trash service.

SUBJECT Waste Characterization Study
Average workers per commercial customer
BY CSB DATE 12/4/96 PROJ. NO. 95-569-01
CHKD. BY JSG DATE 12/4/96 SHEET NO. 1 OF 3

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This calculation is to estimate workers per commercial customer.

Reference: West Virginia Employment and Wages Report, 1995.

Waste Shed E

Greenbrier – units = 1062
employment = 12190

$$\frac{12190}{1062} = 11.5 \frac{\text{people}}{\text{business}}$$

Nicholas – units = 692
employment = 7679

$$\frac{7679}{692} = 11.1 \frac{\text{people}}{\text{business}}$$

Pocahontas – units = 276
employment = 3248

$$\frac{3248}{276} = 11.8 \frac{\text{people}}{\text{business}}$$

Webster – units = 202
employment = 2246

$$\frac{2246}{202} = 11.1 \frac{\text{people}}{\text{business}}$$

$$\text{Average} = \frac{11.5 + 11.1 + 11.8 + 11.1}{4} = 11.4 \frac{\text{people}}{\text{business}}$$

SUBJECT Waste Characterization Study
Average workers per commercial customer

BY CSB DATE 12/4/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 12/4/96 SHEET NO. 2 OF 3

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Waste shed H

Boone- units = 403
employment = 7604

$\frac{7604}{403} = 18.9 \frac{\text{people}}{\text{business}}$

Cabell- units = 991
employment = 14327

$\frac{14327}{991} = 14.5 \frac{\text{people}}{\text{business}}$

Calhoun- units = 158
employment = 1330

$\frac{1330}{158} = 8.4 \frac{\text{people}}{\text{business}}$

Kanawha- units = 6117
employment = 106386

$\frac{106386}{6117} = 17.4 \frac{\text{people}}{\text{business}}$

Lincoln- units = 294
employment = 2618

$\frac{2618}{294} = 8.9 \frac{\text{people}}{\text{business}}$

SUBJECT Waste Characterization Study
Average workers per commercial customer

BY CSB DATE 12/4/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 12/4/96 SHEET NO. 3 OF 3

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Logan - units = 957
employment = 12634

$$\frac{12634}{957} = 13.2 \frac{\text{people}}{\text{business}}$$

Mason - units = 410
employment = 7018

$$\frac{7018}{410} = 17.1 \frac{\text{people}}{\text{business}}$$

Putnam - units = 1026
employment = 14563

$$\frac{14563}{1026} = 14.2 \frac{\text{people}}{\text{business}}$$

Roane - units = 333
employment = 3469

$$\frac{3469}{333} = 10.4 \frac{\text{people}}{\text{business}}$$

Wayne - units = 617
employment = 8862

$$\frac{8862}{617} = 14.4 \frac{\text{people}}{\text{business}}$$

$$\text{Average} = \frac{18.9 + 14.5 + 8.4 + 17.4 + 8.9 + 13.2 + 17.1 + 14.2 + 10.4 + 14.4}{10}$$

$$\text{Average} = 13.7 \frac{\text{people}}{\text{business}}$$

SUBJECT Waste Characterization Study
Waste Shed F Per Capita Generation Rate
BY CSB DATE 12/4/96 PROJ. NO. 95-569-01
CHKD. BY JSG DATE 12/12/96 SHEET NO. 1 OF 2

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This calculation is to estimate the per capita generation rate for Waste Shed F.

$$PCG = \frac{W}{D \cdot [(C_R \cdot P_R) + (C_C \cdot P_C)]}$$

PCG ≡ Per Capita Generation Rate $\left(\frac{lb}{person\ per\ Day}\right)$
W ≡ Weight of * Waste landfilled in Wasteshed per time period (lb,
D ≡ Days per time period (days)
C_R ≡ Total residential Customers
C_C ≡ Total commercial customers
P_R ≡ People per residential customer
P_C ≡ People per commercial customer

* - Waste includes applicable residential and commercial tonnages as reported on tonnage sheets.

$W_{April} = 4124.65\ tons \left(\frac{2000\ lbs}{1\ ton}\right) = 8249300\ lbs.$

$W_{July} = 4761.74\ tons \left(\frac{2000\ lbs}{1\ ton}\right) = 9523480\ lbs.$

W per CSB 12/2/96 calc.

$D_{April} = 30\ days$

$D_{July} = 31\ days$

SUBJECT Waste Characterization Study
Waste Shed F Per Capita Generation Rate

BY CSB DATE 12/4/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 12/12/96. SHEET NO. 2 OF 2

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C_R = 22590 customers

C_C = 1885 customers

C per CSB 12/4/96 calc.

P_R = 2.55 $\frac{\text{people}}{\text{customer}}$ per 1990 Census data.

P_C = 11.4 $\frac{\text{people}}{\text{customer}}$ per CSB 12/4/96 calc.

$$PCG_{April} = \frac{8249300}{30 \cdot [(22590 \cdot 2.55) + (1885 \cdot 11.4)]}$$

PCG_{April} = 3.48 lb/person per day

$$PCG_{July} = \frac{9523480}{31 \cdot [(22590 \cdot 2.55) + (1885 \cdot 11.4)]}$$

PCG_{July} = 3.88 lb/person per day

SUBJECT Waste Characterization Study
Waste Shed H Per Capita Generation Rate
BY CSB DATE 12/5/96 PROJ. NO. 95-569-01
CHKD. BY JSG DATE 12/12/96 SHEET NO. 1 OF 2

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This calculation is to estimate the per capita generation rate for Waste Shed H.

$$PCG = \frac{W}{D \cdot [(C_R \cdot P_R) + (C_C \cdot P_C)]}$$

PCG ≡ Per Capita Generation Rate $\left(\frac{lb}{person\ per\ Day}\right)$
W ≡ Weight of *Waste landfilled in Wasteshed per time period (lb)
D ≡ Days per time period (days)
C_R ≡ Total residential Customers
C_C ≡ Total commercial customers
P_R ≡ People per residential customer
P_C ≡ People per commercial customer

* waste includes applicable residential and commercial tonnages as reported on tonnage sheets.

$W_{April} = 26879.81\ tons \left(\frac{2000\ lb}{1\ ton}\right) = 53759620\ lbs.$

$W_{July} = 29079.71\ tons \left(\frac{2000\ lb}{1\ ton}\right) = 58159420\ lbs.$

W per CSB 12/2/96 calc.

$D_{April} = 30\ days$

$D_{July} = 31\ days$

SUBJECT Waste Characterization Study
Waste Shed H Per Capita Generation Rate

BY CSB DATE 12/5/96 PROJ. NO. 95-569-01

CHKD. BY JSG DATE 12/12/96 SHEET NO. 2 OF 2

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$C_R = 129775$

$C_C = 9475$

C per CSB 12/4/96 calc.

$P_R = 2.55 \frac{\text{people}}{\text{customer}}$ per 1990 census data.

$P_C = 13.7 \frac{\text{people}}{\text{customer}}$ per CSB 12/4/96 calc.

$$PCG_{April} = \frac{53759620}{30 \cdot [(129775 \cdot 2.55) + (9475 \cdot 13.7)]}$$

$PCG_{April} = 3.89$ lb/person per day

$$PCG_{July} = \frac{58159420}{31 \cdot [(129775 \cdot 2.55) + (9475 \cdot 13.7)]}$$

$PCG_{July} = 4.07$ lb/person per day

SUBJECT Waste Characterization Study
Predicted MSW Generation

BY CSB DATE 3/24/97 PROJ. NO. 95-569-01

CHKD. BY CFS DATE 3/24/97 SHEET NO. 1 OF 2

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This calculation is to estimate the generation of MSW based on per capita generation rates calculated by CSB.

Reference: US 1990 Census Data.

Wasteshed F Population per 1990 Census = 81,205

Wasteshed H Population per 1990 Census = 527,384

PER CAPITA GENERATION RATES*
(Pounds per person per day)

METHOD 1	WASTESHED F	WASTESHED H
1993	3.49	4.51
1994	3.55	4.60
METHOD 2	**WASTESHED F**	**WASTESHED H**
April 1996	3.48	3.89
July 1996	3.88	4.07

* Per rates calculated by GAI.

Method 1

Wasteshed F:

1993 – $\frac{3.49 \text{ lbs}}{\text{person-day}} \left| \frac{81205 \text{ people}}{} \right| \frac{1 \text{ ton}}{2000 \text{ lbs}} \left| \frac{365 \text{ day}}{1 \text{ year}} \right. = 51,721.5 \frac{\text{ton}}{\text{yr.}}$

1994 – $\frac{3.55}{} \left| \frac{81205}{} \right| \frac{}{2000} \left| \frac{365}{} \right. = 52,610.7 \frac{\text{tons}}{\text{yr.}}$

Wasteshed H:

1993 – $\frac{4.51}{} \left| \frac{527384}{} \right| \frac{}{2000} \left| \frac{365}{} \right. = 434,076.6 \frac{\text{tons}}{\text{yr.}}$

1994 – $\frac{4.60}{} \left| \frac{527384}{} \right| \frac{}{2000} \left| \frac{365}{} \right. = 442,738.9 \frac{\text{tons}}{\text{yr.}}$

SUBJECT Waste Characterization Study
Predicted MSW Generation

BY CSB DATE 3/24/97 PROJ. NO. 95-569-01

CHKD. BY CFS DATE 3/24/97 SHEET NO. 2 OF 2

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Method 2

Wasteshed F:

April 1996 – $\frac{3.48 \mid 81205 \mid \quad \mid 365}{\quad \mid \quad \mid 2000 \mid} = 51{,}573.3 \frac{\text{tons}}{\text{yr.}}$

July 1996 – $\frac{3.88 \mid 81205 \mid \quad \mid 365}{\quad \mid \quad \mid 2000 \mid} = 57{,}501.3 \frac{\text{tons}}{\text{yr.}}$

Wasteshed H:

April 1996 – $\frac{3.89 \mid 527384 \mid \quad \mid 365}{\quad \mid \quad \mid 2000 \mid} = 374{,}403.1 \frac{\text{tons}}{\text{yr.}}$

July 1996 – $\frac{4.07 \mid 527384 \mid \quad \mid 365}{\quad \mid \quad \mid 2000 \mid} = 391{,}727.7 \frac{\text{tons}}{\text{yr.}}$

SUBJECT Waste Characterization Study
1996 MSW Disposal in Wastesheds F and H

BY CSB DATE 3/24/97 PROJ. NO. 95-569-01

CHKD. BY CFS DATE 3/24/97 SHEET NO. 1 OF 1

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This calculation is to determine the tonnage of MSW disposed in 1996 for Wastesheds F and H.

MONTH	WASTESHED F	WASTESHED H
JANUARY	4,154.25	22,838.74
FEBRUARY	4,329.04	20,417.65
MARCH	3,983.99	22,498.28
APRIL	5,219.16	27,946.26
MAY	5,629.24	32,737.84
JUNE	4,390.80	27,814.22
JULY	5,040.44	31,992.21
AUGUST	4,992.03	29,074.01
SEPTEMBER	4,283.76	27,206.38
OCTOBER	4,199.44	28,820.63
NOVEMBER	3,426.76	22,531.89
DECEMBER	3,668.76	23,966.75
TOTALS	**53,317.67** [1]	**317,844.86** [2]

NOTE: TONNAGE INCLUDES RESIDENTIAL, COMMERCIAL AND FREE-DAY WASTE ONLY

1: 219.81 TONS FROM CLEAN-UPS NOT INCLUDED
2: 2,248.18 TONS FROM CLEAN-UPS AND 76,306 TONS EXPORTED TO KY AND OH NOT INCLUDED

SOURCE: WV DEP MONTHLY TONNAGE REPORTS

Say:
Wasteshed F = 53,318 tons in 1996.

Wasteshed H = 317,845 + 76,306 = 394,151 tons in 1996.