

REPORT

Iowa Statewide Waste Characterization Study

Iowa Department of Natural Resources



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Acknowledgement

R. W. Beck, Inc. and the Iowa Department of Natural Resources would like to thank the six participating solid waste facilities and their respective staffs for their cooperation in completing this study.

- Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1;
- Boone County Landfill;
- Des Moines County Regional Waste Commission Landfill;
- Dubuque Metropolitan Area Solid Waste Agency Landfill;
- Metro Waste Authority Metro Park East Landfill; and
- Northwest Iowa Area Solid Waste Agency Landfill.

Iowa Department of Natural Resources Statewide Waste Characterization Study

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This report was prepared with the support of the Iowa Department of Natural Resources (IDNR) Contract Number 06-G550-02. It has been prepared for use by the IDNR for the specific purposes identified in the report. Use of the report and its contents for other purposes is prohibited without prior approval from the IDNR. Any opinions, findings, conclusions or recommendations expressed herein are those of the author and do not necessarily reflect the views of the IDNR.

1.1 Study Objectives

The Iowa Department of Natural Resources (IDNR) commissioned the completion of a statewide waste characterization study in 2005 (2005 Study). The 2005 Study objectives included the following:

- Gather waste composition data using a methodology that is consistent with the 1998 Iowa Statewide Waste Characterization Study (1998 Study) to effectively compare the results of the two studies.
- Develop a reliable statewide waste characterization identifying the types and estimated quantities of the solid waste and municipal solid waste (MSW) received for disposal at Iowa solid waste facilities. (See glossary for definitions).
- Estimate the types and quantities of potentially recoverable and compostable materials in the Iowa solid waste stream to assist in meeting Iowa's 50% waste reduction and recycling goal.
- Gather data on the Iowa solid waste stream that can be used to improve existing solid waste programs and to design and procure needed solid waste facilities.

1.2 Study Design

To achieve the objectives described above, the following was undertaken as part of the 2005 Study design:

- Determined material categories;
- Completed pre-sort site assessments;
- Formulated materials sort protocol;
- Conducted sampling and sorting events;
- Compiled and reviewed collected data; and
- Completed statistical modeling.

The primary task of conducting sampling and sorting events was completed in the fall of 2005. A set of one-season, field sorts were conducted at six Iowa solid waste facilities. The facilities participating in the 2005 Study included the following:

- Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1;
- Boone County Landfill;

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- Des Moines County Regional Waste Commission Landfill;
- Dubuque Metropolitan Area Solid Waste Agency Landfill;
- Metro Waste Authority Metro Park East Landfill; and
- Northwest Iowa Area Solid Waste Agency Landfill.

A total of 300 samples representing more than 69,300 pounds of municipal solid waste (MSW) were sorted for the 2005 Study. The materials were sorted into 52 material categories (see Appendix A for categories and applicable definitions). The weights of the various materials in each sample were compiled for each site by generator type (i.e., residential, ICI, and mixed). The results at the six sites were then aggregated to characterize the MSW on a statewide basis by generator type and overall. The results of the 2005 Study were then compared to the 1998 Study.

1.3 Study Results

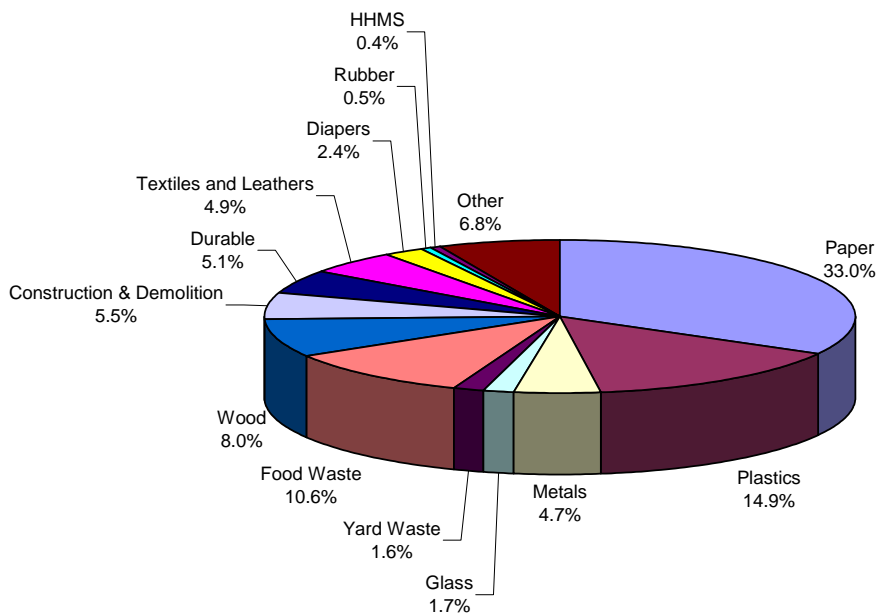
The Iowa statewide MSW characterization is depicted below in Table 1-1 and Figure 1-1.

Table 1-1 Iowa Statewide Municipal Solid Waste Composition			
Materials	Mean	Lower Bound	Upper Bound
Compostable Paper	6.5%	5.7%	7.4%
High Grade Office	2.5%	1.9%	3.1%
Magazines	1.8%	1.6%	2.1%
Mixed Recyclable Paper	7.0%	6.3%	7.7%
Newsprint	4.0%	3.4%	4.7%
Non-Recyclable Paper	2.8%	2.3%	3.3%
OCC and Kraft Bags	8.5%	7.2%	10.1%
Total Paper	33.0%	30.5%	35.7%
# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.2%
# 1 PET Beverage Containers	0.4%	0.4%	0.5%
# 2 HDPE Containers	1.0%	0.9%	1.2%
Film/Wrap/Bags	6.6%	5.7%	7.5%
Other # 1 PET Containers	0.3%	0.2%	0.3%
Other Plastic Containers	0.4%	0.3%	0.5%
Other Plastic Products	6.0%	5.3%	6.9%
Total Plastics	14.9%	13.4%	16.6%

Table 1-1 Iowa Statewide Municipal Solid Waste Composition			
Materials	Mean	Lower Bound	Upper Bound
Aluminum Beverage Containers	0.1%	0.1%	0.2%
Aluminum Deposit Beverage Containers	0.2%	0.1%	0.2%
Ferrous Food and Beverage Containers	1.0%	0.8%	1.2%
Other Aluminum Containers	0.1%	0.1%	0.2%
Other Ferrous Metals	2.8%	2.3%	3.5%
Other Non-Ferrous Scrap	0.5%	0.4%	0.6%
Total Metals	4.7%	4.1%	5.5%
Blue Glass	0.0%	0.0%	0.1%
Brown Glass	0.0%	0.0%	0.1%
Clear Glass	0.7%	0.6%	0.9%
Glass Deposit Containers	0.3%	0.2%	0.4%
Green Glass	0.1%	0.1%	0.2%
Other Mixed Cullet	0.5%	0.4%	0.7%
Total Glass	1.7%	1.5%	2.0%
Pumpkins	0.3%	0.2%	0.4%
Yard Waste	1.4%	1.0%	1.9%
Total Yard Waste	1.6%	1.3%	2.2%
Food Waste	10.6%	9.3%	12.2%
Non-Treated	3.4%	2.7%	4.4%
Treated	4.6%	3.6%	6.0%
Total Wood	8.0%	6.5%	9.9%
Demolition/Renovation/ Construction Debris	5.5%	4.1%	7.6%
Cell phones and Chargers	0.0%	0.0%	0.0%
Central Processing Units/Peripherals	0.2%	0.1%	0.3%
Computer Monitors/TV'S	0.1%	0.0%	0.1%
Electrical and Household Appliances	2.1%	1.6%	2.9%
Other Durables	2.7%	1.9%	3.8%
Total Durable	5.1%	3.9%	6.6%
Textiles and Leathers	4.9%	4.0%	6.1%
Diapers	2.4%	2.0%	2.8%
Rubber	0.5%	0.3%	0.6%
Automotive Products	0.0%	0.0%	0.0%
Household Cleaners	0.0%	0.0%	0.0%
Lead Acid Batteries	0.0%	0.0%	0.0%
Mercury Containing Products	0.0%	0.0%	0.0%
Other Batteries	0.2%	0.2%	0.3%
Other HHM	0.1%	0.1%	0.1%
Paints and Solvent	0.1%	0.1%	0.2%
Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total HHMS	0.4%	0.4%	0.6%

Table 1-1 Iowa Statewide Municipal Solid Waste Composition			
Materials	Mean	Lower Bound	Upper Bound
Sharps	0.0%	0.0%	0.0%
Other Organic	1.5%	1.2%	1.8%
Other Inorganic	2.4%	1.9%	3.0%
Fines/Super Mix	2.4%	2.1%	2.8%
Other	0.5%	0.3%	0.8%
Grand Total	100.0%		

**Figure 1-1
2005 Iowa Statewide MSW Composition**



The detailed results that follow include solid waste composition, MSW composition, and MSW composition by generator type (i.e., residential, ICI, and mixed). The solid waste composition represents an estimate of all materials landfilled including dedicated construction and demolition materials and special wastes (e.g., sludges, asbestos, fluff, and other materials requiring a special waste authorization for disposal). The MSW composition excludes industrial processed wastes, special wastes, and deducted C&D. Only C&D that is commingled with MSW is included as part of the MSW composition. The Iowa statewide solid waste characterization is depicted below in Table 1-2 and Figure 1-2.

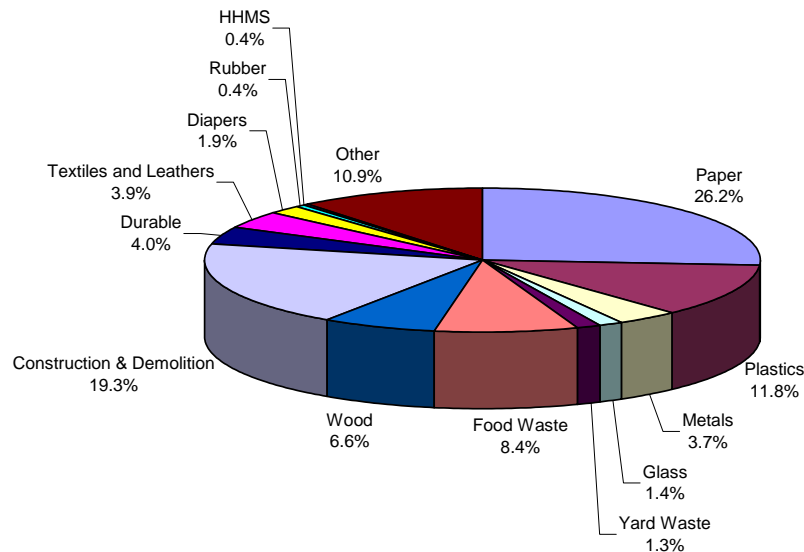
Table 1-2 Iowa Statewide Solid Waste Composition	
Material	Mean
Compostable Paper	5.15%
High Grade Office	1.95%
Magazines	1.44%
Mixed Recyclable Paper	5.53%
Newsprint	3.18%
Non-Recyclable Paper	2.18%
OCC and Kraft Bags	6.74%
Total Paper	26.17%
# 1 PET Deposit Beverage Containers	0.16%
# 1 PET Beverage Containers	0.34%
# 2 HDPE Containers	0.80%
Film/Wrap/Bags	5.20%
Other # 1 PET Containers	0.21%
Other Plastic Containers	0.31%
Other Plastic Products	4.77%
Total Plastic	11.78%
Aluminum Beverage Containers	0.11%
Aluminum Deposit Beverage Containers	0.13%
Ferrous Food and Beverage Containers	0.78%
Other Aluminum Containers	0.08%
Other Ferrous Metals	2.24%
Other Non-Ferrous Scrap	0.39%
Total Metals	3.74%
Blue Glass	0.03%
Brown Glass	0.03%
Clear Glass	0.57%
Glass Deposit Containers	0.21%
Green Glass	0.09%
Other Mixed Cullet	0.43%
Total Glass	1.36%
Pumpkins	0.21%
Yard Waste	1.07%
Total Yard Waste	1.28%

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**Table 1-2
Iowa Statewide
Solid Waste Composition**

Material	Mean
Food Waste	8.40%
Non-Treated	2.69%
Treated	3.64%
Total Wood	6.60%
Cell phones and Chargers	0.00%
Central Processing Units/Peripherals	0.15%
Computer Monitors/TV'S	0.04%
Electrical and Household Appliances	1.70%
Other Durables	2.12%
Total Durables	4.02%
Textiles and Leathers	3.88%
Diapers	1.89%
Rubber	0.36%
Automotive Products	0.02%
Household Cleaners	0.01%
Lead Acid Batteries	0.00%
Mercury Containing Products	0.00%
Other Batteries	0.16%
Other HHM	0.06%
Paints and Solvent	0.09%
Pesticides, Herbicides, Fungicides	0.01%
Total HHMS	0.35%
Sharps	0.01%
Other Organic	1.18%
Other Inorganic	1.88%
Fines/Super Mix	1.89%
Other	0.31%
Demolition/Renovation/ Construction Debris	19.28%
Special Wastes	5.63%
Grand Total	100.0%

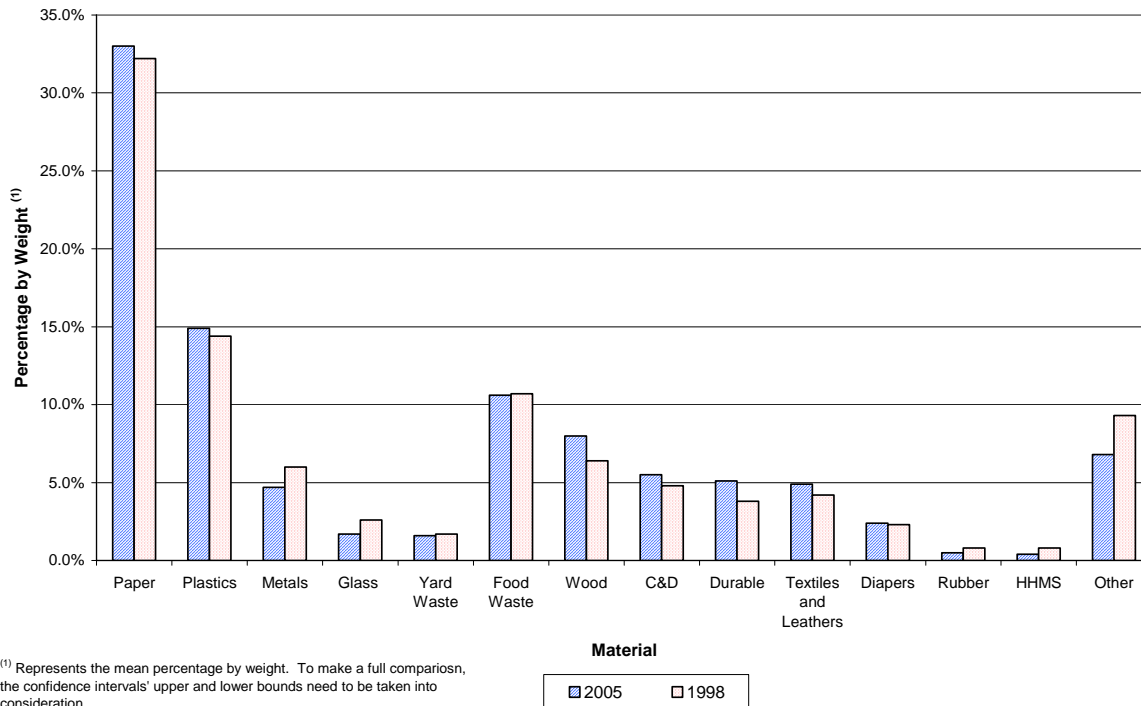
Figure 1-2
2005 Iowa Statewide Solid Waste Composition



1.4 Comparison of 2005 Study to the 1998 Study

The results from the 2005 Study were compared to the 1998 Study results. The mean percentage by weight and lower and upper bounds were compared to identify changes in the MSW stream. The bar chart below depicts the mean percentage by weight for the primary material categories for the 2005 Study as compared to the 1998 Study.

Figure 1-3
Iowa Statewide Municipal Solid Waste Composition: 1998 and 2005 Comparison



The comparative results reflected a percentage increase in the following material categories:

- Mixed recyclable paper;
- #1 PET;
- Film/wrap/bags; and
- Other batteries.

The comparative results reflected a percentage decrease in the following primary material categories:

- Magazines;
- Other plastic containers;
- Ferrous food and beverage containers;
- Glass;
- Rubber;
- HHM; and
- Sharps.

1.5 Landfill Diversion Opportunities

Based upon the results from the 2005 Study, additional source reduction and landfill diversion opportunities were identified for the solid waste stream. The items in the solid waste stream representing the greatest potential for source reduction and recovery through recycling and composting and the estimated tonnages disposed of each statewide included the following:

- OCC (180,600);
- Mixed recyclable paper (148,200);
- Compostable paper (138,000);
- Food waste (225,000);
- Film/wrap/bags (139,300); and
- Demolition/construction debris (516,600);

Please note that not all of the demolition/construction debris is recoverable. Additional evaluation of this substream is recommended to identify the scope of the materials recovery opportunities.

2.1 Introduction

This section describes the relevant study background, characterizes the key objectives of the 2005 Iowa Statewide Waste Composition Study (2005 Study) and identifies the participating solid waste facilities.

2.2 Study Objectives

The Iowa Department of Natural Resources (IDNR) commissioned the completion of a statewide waste characterization study in 1997 that included a two-season waste sort at five Iowa solid waste facilities and was completed in 1998 (1998 Study). The 1998 Study included training and oversight by R. W. Beck, Inc. (R. W. Beck) of local solid waste facility staff to assist in the completion of the actual field sorts. To follow-up this 1998 Study, the IDNR commissioned R. W. Beck to conduct a similar statewide characterization study in 2005 (2005 Study). However, in the 2005 Study, the R. W. Beck project team directed and completed one-season field sorts at six Iowa solid waste facilities.

The 2005 Study objectives included the following:

- Gather waste composition data using a methodology that is consistent with the 1998 Study to effectively compare the results of the two studies.
- Develop a reliable statewide waste characterization identifying the types and estimated quantities of the solid waste and MSW received for disposal at Iowa solid waste facilities.
- Estimate the types and quantities of potentially recoverable and compostable materials in the Iowa solid waste stream to assist in meeting Iowa's 50% waste reduction and recycling goal.
- Gather data on the Iowa solid waste stream that can be used to improve existing solid waste programs and to design and procure needed solid waste facilities.

The 2005 Study was designed to achieve the above objectives.

2.3 Participating Facilities

To accomplish the objectives described above, a set of one-season field sorts were conducted at six Iowa solid waste facilities. The facilities participating in the Study were collaboratively selected by the IDNR and the R. W. Beck project team (Project

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Team). The IDNR requested written proposals from those facility representatives who were interested in participating in the 2005 Study. Information requested included a description of the designated site location for sorting materials and commitment to provide needed staffing and equipment to deliver materials for sampling and sorting. From a set of interested facilities, six sites were selected based on the need to reflect both geographic and facility/program diversity. The selected solid waste facilities represented urban and rural service areas, varied in size (i.e., quantities of materials accepted), and included individual county and multi-county service areas.



The six solid waste facilities participating in the 2005 Study included the following:

- Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1;
- Boone County Landfill;
- Des Moines County Regional Waste Commission Landfill;
- Dubuque Metropolitan Area Solid Waste Agency Landfill;
- Metro Waste Authority Metro Park East Landfill; and
- Northwest Iowa Area Solid Waste Agency Landfill.

3.1 Introduction

This section outlines the study design used by the R. W. Beck Project Team. The 2005 Study design included the following steps:

- determine material categories;
- complete pre-sort site assessments;
- formulate materials sorting protocol;
- conduct sampling and sorting events;
- compile and review collected data; and
- complete statistical modeling.

Each step is critical to developing a representative Iowa statewide waste characterization.

3.2 Determine Material Categories

The material categories selected for the 2005 Study were based on the scope of definitions used in the 1998 Statewide Waste Characterization Study (1998 Study), discussions with the Iowa Department of Natural Resources (IDNR) staff, and R. W. Beck's waste characterization experience. The primary intent was to ensure the results of the two studies could be effectively compared.

A set of 52 categories were selected for this study. The definitions of each of these categories are included in the Appendix for reference. The following additional subcategories were added in the 2005 Study as compared to the 1998 Study:

- Compostable Paper;
- Other #1 PET Containers;
- Other Aluminum Containers;
- Mercury Containing Products;
- Central Processing Units;
- Computer Monitors/TV's; and
- Cell Phones and Chargers.

The primary material categories included as part of the 1998 Study were used as the primary categories in the 2005 Study to allow for a comparison of the results.

The rationale for several of the various categories included the following:

- Paper category is divided into the various subcategories of recyclable paper to illustrate materials recycling opportunities.
- Mixed paper was categorized into the three subcategories of recyclable, non-recyclable, and compostable to measure opportunities for both mixed paper recycling and composting.
- Deposit containers were distinguished from non-deposit containers in the plastic, metal, and glass categories. Moreover, the additional subcategories of Other #1 PET containers and Other aluminum containers were added to capture non-deposit containers that are likely to be excluded from the bottle bill if it was expanded to include water, fruit juice, sports drink, and ice tea.
- Multiple subcategories for household hazardous materials (HHMS) were included to estimate the mix of different types of HHM, including the addition of mercury containing products.
- Treated wood as opposed to non-treated wood was included to identify the recoverable segment of the wood wastes substream.
- Construction and demolition (C&D) materials were categorized separately from such categories as wood, metals, and old corrugated containers because these materials are generally collected and transported separately.
- A subcategory for pumpkins was identified as part of yard waste because of the seasonal time period the sorts were completed.
- Separate categories for computer components and cell phones were included because these items are perceived as growing components of the waste stream.

3.3 Complete Pre-Sort Site Assessment

Prior to initiating the sorting events, it was critical to conduct site assessments at each of the participating facilities. R. W. Beck staff conducted visits of each of the six selected sorting sites prior to initiating the actual field sorts. The six sites included the following:

- Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1;
- Boone County Landfill;
- Des Moines County Regional Waste Commission Landfill;
- Dubuque Metropolitan Area Solid Waste Agency Landfill;
- Metro Waste Authority Metro Park East Landfill; and
- Northwest Iowa Area Solid Waste Agency Landfill.

The purpose of the site assessments was two-fold – to promote facility staff support and cooperation for the sorting events and gather data and site information needed to develop a sampling and sorting plan for each site.

Prior to conducting the individual facility site visits, we forwarded a data request to the respective facility operators for facility disposal and transaction information. This information was reviewed to identify the average weekly and daily quantities of materials received at each respective facility, types of hauling vehicles used at each facility, and an overview of the scope of the activity at each facility. The site visits provided an opportunity to discuss and clarify the facility transaction data provided.



3.4 Formulate Materials Sorting Protocol

Upon completing the pre-sort site assessments, development of materials sorting protocol was essential to obtain consistent and representative waste characterization data. The critical aspects of the sampling and sorting plan relating to the materials sort protocol are discussed below. These include the following:

- seasonality;
- generator types; and
- frequency of sampling.

3.4.1 Seasonality

R. W. Beck and the IDNR concluded that seasonal differences in the solid waste and MSW stream are not statistically substantial. The rationale for this conclusion was based on the minimal differences identified as part of the seasonal results in the 1998 Study. Historically, the most seasonably variable material in the MSW stream is yard waste, however the landfill disposal ban on this material has minimized much of the seasonal variability. As a result, the IDNR requested that all of the field data be collected in the Fall of 2005.

3.4.2 Generator Types

The IDNR requested that data be collected for the residential sector (including both single-family and multi-family residences) and for the industrial/commercial/institutional (ICI) sector. Through our site assessments, we determined that currently only limited data is available on the proportion of residential versus ICI materials received at Iowa solid waste facilities.

To gather data by residential, ICI, and mixed generator type, the Project Team relied on the sampling randomization inherent in the Nth truck approach. The Nth truck approach is based on the number of vehicles expected each day and the number of samples required for the Study to yield statistically sound results. Due to limited data regarding the breakdown of residential versus ICI in incoming waste at most of the participating facilities, R. W. Beck selected for sampling every Nth truck entering the facility. Based on an interview with the driver, the contents of the truck were assigned to the residential, ICI or mixed sector. The random selection of the vehicle loads dictate the ultimate mix of generator type samples actually sorted. Provided below is a discussion of the issues associated with each of the generator types that was considered when establishing the waste sort protocol.

Residential Waste. Public or private haulers typically serve residents with large compactor trucks that collect waste from multiple households. The waste from these households is thoroughly mixed during the collection and tipping process. The Project Team's opinion is that, as long as trucks are captured from most geographical and demographic areas of the study jurisdiction, it is fairly straightforward to obtain representative samples of residential waste. This conclusion is based on our overall opinion that:

- Residential waste composition does not differ materially based on the time of day it is collected; and
- Residential waste composition does not differ materially based on the day of the week it is collected.

The only significant difference in residential waste commonly observed by the Project Team has been waste delivered by large compactor vehicles compared to waste delivered by individual residents. The quantity of resident-delivered waste was evaluated per facility transaction data prior to conducting the sort to determine how many (if any) resident-delivered samples should be taken. If it was determined that

sufficient incoming material was being delivered by residents to warrant inclusion in the composition study, aggregated samples of resident delivered wastes were sampled and sorted.

The identification of multi-family residential waste can be a challenge. Multi-family generated waste materials are usually collected through front-end loading vehicles and thus may be mixed with ICI wastes. The Project Team utilized the driver interview process in conjunction with visual observation of the sample loads to discern loads that should be classified as residential, as opposed to ICI.

ICI Waste. The ICI sector typically has the greatest variation in waste composition from sample to sample. Restaurants, retail establishments, offices, institutions, manufacturing establishments, warehouses, general contractors, and other waste types typically are delivered separately in individual truckloads, rather than all mixed together.

When evaluating any particular fraction of ICI waste, some of the same assumptions hold true as for residential waste. In other words, for example, waste generated at a restaurant will not differ materially based on the day of the week it is generated, nor on the time of day it is collected. The same holds true for offices, retail, etc.

Yet, because the composition of ICI loads arriving at a facility for disposal is so variable during the course of a single day, it is vital during any waste composition study to obtain samples from most of the subcategories that contribute to the ICI stream. This can best be performed by sampling from a variety of vehicles delivering ICI waste. The Nth Truck approach was designed to capture the wide range of subcategories within an individual substream. This was the approach used in the 2005 Study.

Mixed Waste. The mixed waste sector was composed of waste delivered to the designated solid waste facility originating from both the residential and ICI sectors. This waste was delivered in a range of vehicle types including front-end loaders, rear loading packer trucks, transfer trailers, or all-purpose vehicles. When sampled loads were identified as a mix of residential and ICI waste, data was collected similarly to the sampling of residential and ICI samples. The Project Team utilized both the information gathered from the sampled vehicle drivers and from observations of the sample loads to classify loads as mixed waste.

Because the focus of the 2005 Study was on the MSW stream, the sampling protocol excluded loads that could be clearly identified as composed of non-MSW, such as construction & demolition (C&D), special wastes (i.e., ash, grit, etc.) or other industrial processed wastes. The Project Team observed some mixed loads containing non-MSW, but no loads sampled were composed exclusively of non-MSW, such as C&D. At some of the participating facilities, the facility transaction data did identify loads periodically delivered that were composed exclusively of C&D. In these instances, the vehicles hauling primarily C&D were excluded from the vehicle count and sampling scheme.

3.4.3 Frequency of Sampling

The sampling approach taken should result in an adequate number of representative samples being sorted that provide statistically meaningful results. In addition, this objective had to be balanced with the 2005 Study's budget constraints and expedited schedule. The approach selected included one-week sorting events during a "typical" week at each participating facility. The total number of samples that were selected and sorted at each sorting event was approximately 50.

3.5 Conduct Sampling and Sorting Events

One-week sorting events were conducted at each of the selected facilities during the months of September, October, and November. The table below lists the participating facilities, locations, and designated weeks for each sorting event.





**Table 3-1
Sampling and Sorting Events Schedule**

Participating Facility	Location	Week of Sort
Boone County Landfill	Boone	Sept. 19 - 24
Cedar Rapids/Linn County SWA Landfill Site #1	Cedar Rapids	Oct. 10 - 15
Des Moines County Regional Waste Commission Landfill	Burlington	Oct. 31 - Nov. 5
Dubuque Metropolitan Area Solid Waste Agency Landfill	Dubuque	Oct. 24 - 29
Metro Waste Authority Metro Park East Landfill	Des Moines	Sept. 26 - Oct. 1
Northwest Iowa Area Solid Waste Agency Landfill	Sheldon	Oct. 17 - 22

A total of 300 samples representing 69,313 pounds of MSW were sorted during the one-season sorting events in the Fall of 2005.

The selection of vehicles to secure waste materials for sampling was based upon the data from the pre-sort site assessment completed at each facility. At each site, vehicles were randomly selected from within each of the three generator types - residential, ICI, and mixed. This approach assures sort data from each of these generators which can be used to develop a waste characterization for each generator type and combined generator types. From the randomly selected loads, a minimum of 200 pound samples were taken for sorting. Two to three hundred pound samples are

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considered the appropriate size to provide representative results per accepted industry standards. The various samples were randomly selected from the selected loads using a random cell selection processes.

The table below depicts the resulting sampling mix resulting from the various sorting events.

Table 3-2 Sample Types and Quantities Sorted				
Participating Facility	# of Samples			Quantities Sorted
	Res.	ICI	Mixed	
Boone County Landfill	12	9	29 ¹	11,642
Cedar Rapids/Linn County SWA Landfill Site #1	15	29	6	12,063
Des Moines County Regional Waste Commission Landfill	22	20	7	10,955
Dubuque Metropolitan Area Solid Waste Agency Landfill	17	23	11	11,403
Metro Waste Authority Metro Park East Landfill	12	32	6	11,915
Northwest Iowa Area Solid Waste Agency Landfill	8	15	27	11,335
Totals	86	128	86	69,313

¹ Includes four samples of fluff from Ames Resource Recovery Facility.

Once each sample was selected, the materials were pre-sorted for any hazardous or infectious wastes. The materials were then sorted by the Project Team sorting crew into individual containers representing the various 52 material categories. Then, each container was weighed to determine the quantity of materials by material type in each sample. These weights were recorded on individual data sheets to document the sorting process. The data was then forwarded to R. W. Beck's analytical staff for review and analysis.

3.6 Review Collected Data

Upon completing the sampling and sorting events, the data sheets for each sample were reviewed to ensure the following:

- Individual entries were legible;
- Generator types were clearly identified and consistent with the types of materials recorded on the data form;

- A description of the likely origin of the waste materials was included;
- Specific comments on the unusual aspects of the sample were legible and understandable;
- A minimum of 200 pounds as recorded on each sample sheet was sorted for each sample;
- Non-MSW loads were excluded from the analysis; and
- The facility site name and sample number were included on the data sheet.

The tare weight of the individual material's container and the weight of the individual materials plus the weight were recorded on the actual data sheets for all materials weighed. These two sets of quantitative data for each material and each sample are critical to conducting the statistical analysis.

3.7 Complete Statistical Modeling

All of the data from the sorting events were entered into R. W. Beck's specially designed waste composition statistical model (Model). This Model has been developed in Microsoft Excel for easy accessibility and use. The Model statistically manipulates the data to calculate the mean, 90% confidence intervals, and standard deviation for individual material categories by site and generator type. In addition, the Model is structured to identify where specific samples could be considered statistical outliers.

The mean represents the mathematical average or average percent of material composing the MSW stream by weight. The confidence interval is an expression of accuracy. It provides the upper and lower limits of the "actual" mean for all the MSW received at the participating facility based upon the sorting and sampling observations of the sampled materials. For example, the 90% confidence interval represents that there is a 90% level of confidence that the true population mean falls within the upper and lower bounds of the confidence interval. The 90% confidence interval is the generally accepted industry standard for solid waste composition studies. In general, the more samples that are sorted, the narrower the confidence interval becomes for a given level of confidence. The narrower the intervals, the less variability in the data.

Overall, the outputs of the Model provide multiple measures for evaluating the results. It is critical when comparing the MSW composition results that the confidence intervals are considered along with the mean percentages.

4.1 Overview

This section presents the results of the statistical modeling of the quantitative data gathered through the Fall 2005 sampling and sorting events at the six participating facilities. The Project Team used a "bottom up" approach in conducting the statistical analysis. In other words, results were calculated individually for the smallest subsets of data, and then aggregated to estimate facility-wide and statewide results. The specific steps of the analysis are summarized below:

- **Step 1 – Individual Facility, Generator Type:** For each of the participating facilities, the Project Team calculated the composition of the Residential waste stream based solely on the Residential samples obtained at that facility. ICI and Mixed waste composition were calculated in the same manner. These 18 data sets (three generator types at each of the six participating facilities) serve as the basic building blocks for performing the remainder of the analysis.
- **Step 2 – Individual Facility, Aggregate:** For each participating facility, the Project Team developed a weighted-average aggregate composition of the MSW entering that facility. The Residential, ICI, and Mixed waste results from Step 1 were weighted by the number of Residential, ICI, and Mixed waste samples, respectively, obtained using the Nth truck approach during the sort. In some instances, the weighted-average was adjusted to more closely reflect the estimated split of residential, ICI, and mixed materials received based on available facility data.
- **Step 3 – Statewide, Generator:** The statewide results for each generator type were calculated by aggregating the respective generator results (i.e., residential, ICI, and mixed) for the six participating facilities. The individual facility generator results were weighted based on the total MSW received by each of the various participating facilities in fiscal year (FY) '05.
- **Step 4 – Statewide, Aggregate:** The overall statewide results were calculated by aggregating the overall composition for each of the participating facilities. Again, the individual facility results were weighted based on the total MSW received by the various participating facilities in FY '05.

The following assumptions and limitations should be considered upon reviewing the 2005 Study results:

- The 2005 Study assumes that a representative sample of the statewide overall MSW stream can be obtained based on the sampling and sorting of a subset of

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Iowa solid waste facilities. The Project Team's opinion is that the selected six sites and the 69,313 pounds of materials samples provide a representative snapshot of the Iowa MSW stream.

- Sorting events were performed exclusively during the Fall of 2005. Although the results are considered representative, it is possible that some bias may exist with respect to select material categories.
- The statistical results represent projections for statewide, individual generator, and specific facilities. As the number of samples decreases, the confidence intervals tend to widen. The primary objective of the 2005 Study was to characterize the statewide solid waste and MSW streams. The combined generator results for each site generally have reasonable confidence intervals. However, in some instances, caution is recommended when using the generator results for specific sites because of the level of variability.

The table below lists the various facilities and the quantities of MSW reportedly received in FY '05.

Participating Facility	Quantities of MSW Received in FY '05 (tons)
Boone County Landfill	21,917
Cedar Rapids/Linn County SWA Landfill Site #1	139,339
Des Moines County Regional Waste Commission Landfill	39,533
Dubuque Metropolitan Area Solid Waste Agency Landfill	75,721
Metro Waste Authority Metro Park East Landfill	375,189
Northwest Iowa Area Solid Waste Agency Landfill	37,801

It is important to note that the same statistical principles were applied in performing the composition calculations in all of the above steps. In general, statistical principles dictate that roughly 10 to 15 representative samples be obtained from the residential waste stream and 20 to 25 samples from the ICI waste stream to adequately characterize the waste stream for these individual generators. At some of the facilities, the one-season sort does not result in sampling above these thresholds. As a result, the variability of the results of any single generator type at these participating facilities may be larger than preferred. Caution is recommended when drawing conclusions for individual sites.

In aggregating results across generator types and across facilities, the number of samples in the analysis increases and is adequate to characterize the statewide, residential, and ICI waste streams. The increase in sample size decreases the variability of the statewide results (i.e., the confidence intervals narrow).

Consequently, it is possible to obtain representative, reliable statewide generator and overall composition results.

In a few instances, upon review of the field results, samples were not incorporated in the results because they represented outlier samples or were composed primarily of non-MSW.

The Project Team believes that the data depicted here provides a reasonable snapshot of the composition of MSW in Iowa. In all the tables included in this section, the totals may not sum due to rounding. Comprehensive results for all the steps described above are provided in the Appendices.

4.1.1 Statewide

Table 4-2 depicts the statewide municipal solid waste composition by weight. The measures provided include the mean and lower and upper bounds of the composition for each of the material categories. The lower and upper bounds represent a 90% confidence interval for the various material means. Note that the lower and upper bounds are not necessarily equivalent from the mean composition. For example, the upper confidence interval may be larger than the lower confidence to ensure that no confidence intervals are less than zero.

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**Table 4-2
Iowa Statewide
Municipal Solid Waste Composition**

Materials	Mean	Lower Bound	Upper Bound
Compostable Paper	6.5%	5.7%	7.4%
High Grade Office	2.5%	1.9%	3.1%
Magazines	1.8%	1.6%	2.1%
Mixed Recyclable Paper	7.0%	6.3%	7.7%
Newsprint	4.0%	3.4%	4.7%
Non-Recyclable Paper	2.8%	2.3%	3.3%
OCC and Kraft Bags	8.5%	7.2%	10.1%
Total Paper	33.0%	30.5%	35.7%
# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.2%
# 1 PET Beverage Containers	0.4%	0.4%	0.5%
# 2 HDPE Containers	1.0%	0.9%	1.2%
Film/Wrap/Bags	6.6%	5.7%	7.5%
Other # 1 PET Containers	0.3%	0.2%	0.3%
Other Plastic Containers	0.4%	0.3%	0.5%
Other Plastic Products	6.0%	5.3%	6.9%
Total Plastics	14.9%	13.4%	16.6%
Aluminum Beverage Containers	0.1%	0.1%	0.2%
Aluminum Deposit Beverage Containers	0.2%	0.1%	0.2%
Ferrous Food and Beverage Containers	1.0%	0.8%	1.2%
Other Aluminum Containers	0.1%	0.1%	0.2%
Other Ferrous Metals	2.8%	2.3%	3.5%
Other Non-Ferrous Scrap	0.5%	0.4%	0.6%
Total Metals	4.7%	4.1%	5.5%
Blue Glass	0.0%	0.0%	0.1%
Brown Glass	0.0%	0.0%	0.1%
Clear Glass	0.7%	0.6%	0.9%
Glass Deposit Containers	0.3%	0.2%	0.4%
Green Glass	0.1%	0.1%	0.2%
Other Mixed Cullet	0.5%	0.4%	0.7%
Total Glass	1.7%	1.5%	2.0%
Pumpkins	0.3%	0.2%	0.4%
Yard Waste	1.4%	1.0%	1.9%
Total Yard Waste	1.6%	1.3%	2.2%
Food Waste	10.6%	9.3%	12.2%
Non-Treated	3.4%	2.7%	4.4%
Treated	4.6%	3.6%	6.0%
Total Wood	8.0%	6.5%	9.9%
Demolition/Renovation/Construction Debris	5.5%	4.1%	7.6%

Table 4-2 Iowa Statewide Municipal Solid Waste Composition			
Materials	Mean	Lower Bound	Upper Bound
Cell phones and Chargers	0.0%	0.0%	0.0%
Central Processing Units/Peripherals	0.2%	0.1%	0.3%
Computer Monitors/TV'S	0.1%	0.0%	0.1%
Electrical and Household Appliances	2.1%	1.6%	2.9%
Other Durables	2.7%	1.9%	3.8%
Total Durable	5.1%	3.9%	6.6%
Textiles and Leathers	4.9%	4.0%	6.1%
Diapers	2.4%	2.0%	2.8%
Rubber	0.5%	0.3%	0.6%
Automotive Products	0.0%	0.0%	0.0%
Household Cleaners	0.0%	0.0%	0.0%
Lead Acid Batteries	0.0%	0.0%	0.0%
Mercury Containing Products	0.0%	0.0%	0.0%
Other Batteries	0.2%	0.2%	0.3%
Other HHM	0.1%	0.1%	0.1%
Paints and Solvent	0.1%	0.1%	0.2%
Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total HHMS	0.4%	0.4%	0.6%
Sharps	0.0%	0.0%	0.0%
Other Organic	1.5%	1.2%	1.8%
Other Inorganic	2.4%	1.9%	3.0%
Fines/Super Mix	2.4%	2.1%	2.8%
Other	0.5%	0.3%	0.8%
Grand Total	100.0%		

It is critical when evaluating the results to consider not only the mean composition but also the applicable confidence intervals. For example, Table 4-2 depicts the total paper material category with a mean of 33.0% and corresponding confidence intervals of 30.5% and 35.7%. The confidence intervals characterize the level of variability associated with the mean estimate of 33.0%. In other words, we are 90% confident that total paper comprises between 30.5% and 35.7% of the statewide MSW stream. Generally, the more samples taken, the narrower the confidence interval because the accuracy of the estimate is increasing. However, some material types offer inherent variability and their confidence intervals may have thresholds regardless of the extent of the data used in the calculations.

Overall, the width of the confidence intervals for the many material categories in the 2005 Study are reasonable and consistent with other similar types of waste composition studies.

Tables 4-3, 4-4, and 4-5 provide the statewide composition by generator types – residential, ICI and mixed. These results were calculated by using the samples for the

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applicable generator to identify the mean and confidence intervals for the various material categories. Note that the confidence intervals for the ICI generator are generally slightly wider than the confidence intervals for the residential waste. For example, the range of 29.6% to 38.8% for ICI total paper represents 9.2%. The range of 27.5% to 34.8% for residential total paper represents 7.3%. This indicates a greater degree of variability in the paper category for the ICI generator.

Residential waste is relatively homogenous. Although there are some differences in waste generation depending on local characteristics, most households dispose of similar types of waste. Variation generally occurs as a result of the extent of source reduction and recycling activities.

In contrast, the composition of the contents of ICI loads are highly variable. One hauler truckload may have been collected from restaurants, another from offices, and one from an industry. Each of these generators produces different waste streams.

Materials	Mean	Lower Bound	Upper Bound
Compostable Paper	7.9%	6.4%	9.7%
High Grade Office	1.5%	1.2%	2.0%
Magazines	2.4%	1.9%	3.0%
Mixed Recyclable Paper	7.9%	6.7%	9.2%
Newsprint	5.7%	4.3%	7.3%
Non-Recyclable Paper	1.9%	1.5%	2.3%
OCC and Kraft Bags	3.8%	2.8%	4.9%
Total Paper	31.1%	27.5%	34.8%
# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.3%
# 1 PET Beverage Containers	0.5%	0.4%	0.6%
# 2 HDPE Containers	1.3%	1.0%	1.6%
Film/Wrap/Bags	5.3%	4.3%	6.5%
Other # 1 PET Containers	0.4%	0.3%	0.6%
Other Plastic Containers	0.5%	0.4%	0.6%
Other Plastic Products	5.0%	4.0%	6.2%
Total Plastics	13.2%	10.9%	15.8%
Aluminum Beverage Containers	0.0%	0.0%	0.1%
Aluminum Deposit Beverage Containers	0.2%	0.1%	0.3%
Ferrous Food and Beverage Containers	1.2%	1.0%	1.5%
Other Aluminum Containers	0.1%	0.1%	0.1%
Other Ferrous Metals	2.0%	1.4%	2.7%
Other Non-Ferrous Scrap	0.7%	0.5%	0.9%
Total Metals	4.2%	3.3%	5.3%

**Table 4-3
Iowa Statewide
Residential Composition**

Materials	Mean	Lower Bound	Upper Bound
Blue Glass	0.1%	0.0%	0.2%
Brown Glass	0.1%	0.0%	0.1%
Clear Glass	1.0%	0.8%	1.3%
Glass Deposit Containers	0.3%	0.2%	0.4%
Green Glass	0.1%	0.1%	0.2%
Other Mixed Cullet	0.9%	0.5%	1.4%
Total Glass	2.4%	1.9%	3.1%
Pumpkins	0.1%	0.1%	0.2%
Yard Waste	1.6%	0.9%	2.5%
Total Yard Waste	1.7%	1.0%	2.6%
Food Waste	11.2%	9.2%	13.6%
Non-Treated	2.2%	1.1%	3.8%
Treated	4.9%	2.9%	7.8%
Total Wood	7.2%	4.4%	10.8%
Demolition/Renovation/ Construction Debris	5.4%	2.5%	10.0%
Cell phones and Chargers	0.0%	0.0%	0.0%
Central Processing Units/Peripherals	0.0%	0.0%	0.1%
Computer Monitors/TV'S	0.0%	0.0%	0.0%
Electrical and Household Appliances	2.0%	1.1%	3.4%
Other Durables	1.6%	1.0%	2.7%
Total Durable	3.7%	2.5%	5.4%
Textiles and Leathers	5.4%	4.0%	7.1%
Diapers	4.1%	3.1%	5.4%
Rubber	0.1%	0.1%	0.1%
Automotive Products	0.0%	0.0%	0.0%
Household Cleaners	0.0%	0.0%	0.0%
Lead Acid Batteries	0.0%	0.0%	0.0%
Mercury Containing Products	0.0%	0.0%	0.0%
Other Batteries	0.3%	0.2%	0.5%
Other HHM	0.0%	0.0%	0.0%
Paints and Solvent	0.2%	0.1%	0.4%
Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total HHMS	0.6%	0.4%	0.9%
Sharps	0.0%	0.0%	0.0%
Other Organic	2.2%	1.6%	3.0%
Other Inorganic	3.9%	2.8%	5.4%
Fines/Super Mix	3.6%	2.8%	4.6%
Other	0.0%	0.0%	0.0%
Grand Total	100.0%		

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Table 4-4 Iowa Statewide ICI Composition			
Material	Mean	Lower Bound	Upper Bound
Compostable Paper	5.4%	4.3%	6.8%
High Grade Office	3.4%	2.4%	4.6%
Magazines	1.1%	0.8%	1.5%
Mixed Recyclable Paper	6.0%	5.0%	7.2%
Newsprint	2.3%	1.7%	3.2%
Non-Recyclable Paper	3.4%	2.7%	4.5%
OCC and Kraft Bags	12.4%	9.8%	15.3%
Total Paper	34.1%	29.6%	38.8%
# 1 PET Deposit Beverage Containers	0.2%	0.1%	0.3%
# 1 PET Beverage Containers	0.4%	0.3%	0.5%
# 2 HDPE Containers	0.8%	0.6%	1.0%
Film/Wrap/Bags	7.6%	6.0%	9.4%
Other # 1 PET Containers	0.1%	0.1%	0.2%
Other Plastic Containers	0.2%	0.2%	0.3%
Other Plastic Products	6.8%	5.5%	8.4%
Total Plastics	16.2%	13.5%	19.1%
Aluminum Beverage Containers	0.1%	0.1%	0.2%
Aluminum Deposit Beverage Containers	0.1%	0.1%	0.2%
Ferrous Food and Beverage Containers	0.8%	0.5%	1.2%
Other Aluminum Containers	0.1%	0.0%	0.1%
Other Ferrous Metals	3.4%	2.4%	4.6%
Other Non-Ferrous Scrap	0.4%	0.3%	0.5%
Total Metals	4.9%	3.8%	6.2%
Blue Glass	0.0%	0.0%	0.0%
Brown Glass	0.0%	0.0%	0.0%
Clear Glass	0.4%	0.3%	0.6%
Glass Deposit Containers	0.2%	0.1%	0.3%
Green Glass	0.1%	0.0%	0.1%
Other Mixed Cullet	0.3%	0.2%	0.5%
Total Glass	1.0%	0.8%	1.4%
Pumpkins	0.4%	0.2%	0.8%
Yard Waste	0.7%	0.4%	1.1%
Total Yard Waste	1.1%	0.8%	1.7%
Food Waste	10.3%	8.1%	13.1%
Non-Treated	4.7%	3.4%	6.3%
Treated	4.6%	3.2%	6.6%
Total Wood	9.3%	7.0%	12.2%
Demolition/Renovation/ Construction Debris	5.6%	3.7%	8.2%

Table 4-4 Iowa Statewide ICI Composition			
Material	Mean	Lower Bound	Upper Bound
Cell phones and Chargers	0.0%	0.0%	0.0%
Central Processing Units/Peripherals	0.1%	0.0%	0.1%
Computer Monitors/TV'S	0.0%	0.0%	0.0%
Electrical and Household Appliances	2.4%	1.4%	3.6%
Other Durables	4.0%	2.5%	6.1%
Total Durables	6.4%	4.2%	9.3%
Textiles and Leathers	4.8%	3.2%	6.8%
Diapers	0.9%	0.6%	1.2%
Rubber	0.7%	0.5%	1.0%
Automotive Products	0.0%	0.0%	0.1%
Household Cleaners	0.0%	0.0%	0.0%
Lead Acid Batteries	0.0%	0.0%	0.0%
Mercury Containing Products	0.0%	0.0%	0.0%
Other Batteries	0.1%	0.1%	0.1%
Other HHM	0.1%	0.0%	0.1%
Paints and Solvent	0.0%	0.0%	0.1%
Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total HHMS	0.3%	0.2%	0.4%
Sharps	0.0%	0.0%	0.0%
Other Organic	0.9%	0.6%	1.3%
Other Inorganic	1.3%	0.9%	2.0%
Fines/Super Mix	1.4%	1.2%	1.8%
Other	0.8%	0.4%	1.3%
Grand Total	100.0%		

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Table 4-5 Iowa Statewide Mixed Composition			
Material	Mean	Lower Bound	Upper Bound
Compostable Paper	6.9%	6.4%	7.6%
High Grade Office	1.6%	1.3%	2.1%
Magazines	2.6%	2.2%	3.2%
Mixed Recyclable Paper	8.0%	7.2%	8.9%
Newsprint	5.6%	4.9%	6.6%
Non-Recyclable Paper	2.5%	1.9%	3.5%
OCC and Kraft Bags	6.6%	4.7%	9.4%
Total Paper	33.9%	30.8%	37.2%
# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.3%
# 1 PET Beverage Containers	0.5%	0.4%	0.7%
# 2 HDPE Containers	1.1%	1.0%	1.3%
Film/Wrap/Bags	6.1%	5.5%	6.7%
Other # 1 PET Containers	0.3%	0.3%	0.4%
Other Plastic Containers	0.7%	0.5%	1.1%
Other Plastic Products	5.5%	4.6%	6.9%
Total Plastic	14.5%	13.2%	15.9%
Aluminum Beverage Containers	0.3%	0.1%	0.9%
Aluminum Deposit Beverage Containers	0.2%	0.1%	0.3%
Ferrous Food and Beverage Containers	1.0%	0.8%	1.2%
Other Aluminum Containers	0.3%	0.1%	0.6%
Other Ferrous Metals	3.0%	2.2%	4.4%
Other Non-Ferrous Scrap	0.5%	0.4%	0.7%
Total Metals	5.3%	4.3%	6.6%
Blue Glass	0.0%	0.0%	0.1%
Brown Glass	0.1%	0.0%	0.1%
Clear Glass	1.0%	0.7%	1.5%
Glass Deposit Containers	0.5%	0.3%	1.0%
Green Glass	0.2%	0.1%	0.5%
Other Mixed Cullet	0.6%	0.4%	0.9%
Total Glass	2.3%	1.9%	3.0%
Pumpkins	0.1%	0.0%	0.2%
Yard Waste	2.8%	1.7%	5.0%
Total Yard Waste	2.9%	1.8%	5.1%
Food Waste	10.1%	8.7%	12.0%
Non-Treated	1.9%	1.3%	3.0%
Treated	3.9%	2.3%	6.8%
Total Woods	5.8%	3.9%	8.7%
Demolition/Renovation/Construction Debris	5.4%	3.5%	8.8%

Table 4-5 Iowa Statewide Mixed Composition			
Material	Mean	Lower Bound	Upper Bound
Cell phones and Chargers	0.0%	0.0%	0.0%
Central Processing Units/Peripherals	0.9%	0.5%	1.8%
Computer Monitors/TV'S	0.3%	0.1%	0.9%
Electrical and Household Appliances	1.9%	1.2%	2.9%
Other Durables	0.9%	0.6%	1.5%
Total Durables	3.9%	2.9%	5.5%
Textiles and Leathers	4.3%	3.4%	5.6%
Diapers	3.3%	2.8%	4.0%
Rubber	0.4%	0.2%	0.6%
Automotive Products	0.0%	0.0%	0.0%
Household Cleaners	0.0%	0.0%	0.1%
Lead Acid Batteries	0.0%	0.0%	0.0%
Mercury Containing Products	0.0%	0.0%	0.0%
Other Batteries	0.2%	0.2%	0.4%
Other HHM	0.2%	0.1%	0.4%
Paints and Solvent	0.1%	0.1%	0.2%
Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total HHMS	0.6%	0.4%	0.8%
Sharps	0.0%	0.0%	0.0%
Other Organic	1.8%	1.4%	2.3%
Other Inorganic	2.4%	1.9%	3.4%
Fines/Super Mix	2.7%	2.4%	3.1%
Other	0.4%	0.1%	1.0%
Grand Total	100.0%		

4.1.2 Facility Specific Results

Table 4-6 summarizes the results by facility by depicting the mean for each of the material categories. The upper and lower bounds have only been excluded to simplify the presentation of the results. However, the upper and lower bounds for each material category by facility are included in the Appendices. We caution that before drawing comparative conclusions between generators that the confidence intervals be considered similarly to the evaluation of the results at the statewide level. Yet, the variation in the mean for the various categories may suggest trends as it relates to the impact of source reduction and recycling on the quantities disposed.

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Table 4-6 Facility Specific Results – MSW Composition						
Material	Mean					
	Boone County	Des Moines County	Cedar Rapids/Linn County	Dubuque Area	Metro Waste Authority	NW Iowa
Compostable Paper	5.8%	6.7%	7.1%	5.6%	6.4%	6.9%
High Grade Office	1.4%	2.3%	1.6%	1.5%	2.9%	3.5%
Magazines	2.7%	1.5%	1.0%	1.7%	1.9%	3.8%
Mixed Recyclable Paper	9.2%	11.1%	5.3%	5.8%	7.0%	9.4%
Newsprint	5.6%	2.5%	2.4%	4.4%	4.6%	4.1%
Non-Recyclable Paper	4.2%	2.0%	4.3%	3.9%	1.8%	3.8%
OCC and Kraft Bags	7.0%	10.0%	3.5%	9.6%	10.4%	5.8%
Total Paper	36.0%	36.2%	25.2%	32.5%	35.1%	37.3%
# 1 PET Deposit Beverage Containers	0.1%	0.2%	0.3%	0.2%	0.2%	0.2%
# 1 PET Beverage Containers	0.5%	0.5%	0.5%	0.3%	0.4%	0.6%
# 2 HDPE Containers	1.1%	1.1%	0.9%	0.9%	1.0%	1.6%
Film/Wrap/Bags	4.2%	8.5%	6.3%	5.6%	6.8%	6.1%
Other # 1 PET Containers	0.3%	0.2%	0.2%	0.2%	0.3%	0.4%
Other Plastic Containers	0.5%	0.4%	0.4%	0.3%	0.4%	0.5%
Other Plastic Products	4.5%	7.4%	6.5%	6.5%	5.9%	4.1%
Total Plastics	11.3%	18.4%	15.0%	14.1%	14.9%	13.5%
Aluminum Beverage Containers	0.2%	0.1%	0.1%	0.1%	0.2%	0.1%
Aluminum Deposit Beverage Containers	0.1%	0.2%	0.1%	0.1%	0.2%	0.3%
Ferrous Food and Beverage Containers	1.1%	1.2%	1.7%	0.8%	0.7%	1.5%
Other Aluminum Containers	0.2%	0.1%	0.1%	0.2%	0.1%	0.2%
Other Ferrous Metals	3.4%	1.3%	3.5%	2.6%	2.9%	1.5%
Other Non-Ferrous Scrap	0.4%	0.5%	0.5%	0.3%	0.5%	0.6%
Total Metals	5.3%	3.4%	6.0%	4.1%	4.5%	4.3%
Blue Glass	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Brown Glass	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%
Clear Glass	1.1%	0.8%	0.8%	1.0%	0.6%	0.9%
Glass Deposit Containers	0.2%	0.3%	0.3%	0.3%	0.3%	0.4%
Green Glass	0.1%	0.2%	0.1%	0.1%	0.1%	0.0%
Other Mixed Cullet	0.4%	0.2%	1.0%	0.6%	0.4%	0.7%
Total Glass	1.8%	1.7%	2.3%	2.0%	1.4%	2.1%
Pumpkins	0.1%	1.6%	0.7%	0.1%	0.0%	0.3%
Yard Waste	0.7%	1.0%	0.9%	1.0%	1.7%	1.5%
Total Yard Waste	0.8%	2.6%	1.6%	1.2%	1.7%	1.8%
Food Waste	9.8%	14.6%	12.4%	12.1%	9.2%	10.9%
Non-Treated	0.9%	3.2%	4.2%	3.4%	3.5%	1.5%
Treated	1.6%	3.0%	6.1%	4.7%	4.6%	2.1%
Total Wood	2.4%	6.2%	10.3%	8.1%	8.1%	3.6%
Demolition/ Renovation/ Construction Debris	10.2%	1.7%	8.9%	3.5%	4.9%	4.5%

**Table 4-6
Facility Specific Results – MSW Composition**

Material	Mean					
	Boone County	Des Moines County	Cedar Rapids/Linn County	Dubuque Area	Metro Waste Authority	NW Iowa
Cell phones and Chargers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Central Processing Units/Peripherals	0.0%	1.2%	0.2%	0.1%	0.0%	1.3%
Computer Monitors/TV'S	0.0%	0.0%	0.2%	0.0%	0.0%	0.2%
Electrical and Household Appliances	1.4%	1.7%	1.1%	2.4%	2.7%	1.5%
Other Durables	4.1%	1.9%	2.8%	3.5%	2.6%	1.2%
Total Durables	5.5%	4.7%	4.3%	6.0%	5.3%	4.3%
Textiles and Leathers	2.5%	2.7%	3.3%	5.8%	5.7%	5.0%
Diapers	3.0%	1.8%	2.5%	2.3%	2.2%	3.9%
Rubber	0.3%	0.6%	0.2%	1.1%	0.4%	0.4%
Automotive Products	0.1%	0.2%	0.0%	0.0%	0.0%	0.1%
Household Cleaners	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lead Acid Batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mercury Containing Products	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Batteries	0.1%	0.2%	0.3%	0.3%	0.1%	0.5%
Other HHM	0.1%	0.0%	0.2%	0.4%	0.0%	0.2%
Paints and Solvent	0.4%	0.3%	0.0%	0.6%	0.0%	0.1%
Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total HHMS	0.6%	0.7%	0.5%	1.0%	0.2%	0.8%
Sharps	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Other Organic	1.3%	0.9%	1.2%	1.5%	1.6%	1.7%
Other Inorganic	5.0%	1.6%	2.8%	2.6%	2.1%	2.5%
Fines/Super Mix	2.1%	2.2%	2.1%	2.1%	2.6%	2.8%
Other	2.2%	0.0%	1.4%	0.0%	0.1%	0.7%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

As illustrated above, the percentages for the individual material types range from one site to another. However, some preliminary conclusions that can be drawn include:

- The total paper category has the largest range from site to site with Cedar Rapids/Linn County having a low of 25.2% and NW Iowa having the high of 37.3% resulting in more than a 12 percentage point range. This is likely attributable in part to the effectiveness of the Cedar Rapids/Linn County Solid Waste Agency old corrugated cardboard (OCC) landfill ban. The mean percentage of OCC composing the Cedar Rapids/Linn County MSW stream is 3.5% as compared to the other facilities that range from a low of 5.8% for NW Iowa to a high of 10.4% for Metro Waste Authority.
- Several categories of primary materials including metals, glass, yard waste, durables, textiles and leathers, diapers, rubber, and HHM have ranges for the mean of less than 4 percentage points across all sites.

- Plastics, food wastes, wood wastes, and construction/demolition materials have larger ranges of 7.1 percentage points, 5.4 percentage points, 7.9 percentage points, and 8.5 percentage points respectively.
- The Des Moines County results reflect an unusually high percentage of film plastics (8.5%) and food wastes (14.6%).
- The mean percentage of yard waste landfilled, excluding pumpkins, was very consistent across the various sites from a low of .7% at Boone County to a high of 1.7% at Metro Waste Authority.
- The mean percentage of HHM identified at all the sites was 1% or less across all of the sites.

4.1.3 Statewide Solid Waste Characterization

Because Iowa's solid waste management policy includes targeting all materials being landfilled, R. W. Beck also formulated a statewide solid waste characterization. These results include not only MSW, but also materials not subject to the state landfill surcharge such as dedicated construction and demolition materials and special wastes.

To develop this characterization, individual facility solid waste characterizations were developed. These facility-specific characterizations are included in Appendix B for reference. The facility solid waste characterizations were then aggregated and weighted by the total tonnages of solid waste received at each site to estimate the mean percentages by material type on a statewide basis. If necessary, volumetric data was converted to tonnage data. In some facility-specific instances, C&D and special waste quantities were estimated using existing waste characterization studies because site transaction data did not clearly specify the loads of these types of materials. However, overall the statewide characterization represents a reasonable estimate of the statewide solid waste composition.

Table 4-7 provided below represents the statewide solid waste characterization.

Table 4-7 Iowa Statewide Solid Waste Composition	
Material	Mean
Compostable Paper	5.15%
High Grade Office	1.95%
Magazines	1.44%
Mixed Recyclable Paper	5.53%
Newsprint	3.18%
Non-Recyclable Paper	2.18%
OCC and Kraft Bags	6.74%
Total Paper	26.17%
# 1 PET Deposit Beverage Containers	0.16%
# 1 PET Beverage Containers	0.34%
# 2 HDPE Containers	0.80%
Film/Wrap/Bags	5.20%
Other # 1 PET Containers	0.21%
Other Plastic Containers	0.31%
Other Plastic Products	4.77%
Total Plastic	11.78%
Aluminum Beverage Containers	0.11%
Aluminum Deposit Beverage Containers	0.13%
Ferrous Food and Beverage Containers	0.78%
Other Aluminum Containers	0.08%
Other Ferrous Metals	2.24%
Other Non-Ferrous Scrap	0.39%
Total Metals	3.74%
Blue Glass	0.03%
Brown Glass	0.03%
Clear Glass	0.57%
Glass Deposit Containers	0.21%
Green Glass	0.09%
Other Mixed Cullet	0.43%
Total Glass	1.36%
Pumpkins	0.21%
Yard Waste	1.07%
Total Yard Waste	1.28%
Food Waste	8.40%
Non-Treated	2.69%
Treated	3.64%
Total Wood	6.60%
Cell phones and Chargers	0.00%
Central Processing Units/Peripherals	0.15%
Computer Monitors/TV'S	0.04%
Electrical and Household Appliances	1.70%
Other Durables	2.12%
Total Durables	4.02%

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Table 4-7
Iowa Statewide
Solid Waste Composition

Material	Mean
Textiles and Leathers	3.88%
Diapers	1.89%
Rubber	0.36%
Automotive Products	0.02%
Household Cleaners	0.01%
Lead Acid Batteries	0.00%
Mercury Containing Products	0.00%
Other Batteries	0.16%
Other HHM	0.06%
Paints and Solvent	0.09%
Pesticides, Herbicides, Fungicides	0.01%
Total HHMS	0.35%
Sharps	0.01%
Other Organic	1.18%
Other Inorganic	1.88%
Fines/Super Mix	1.89%
Other	0.31%
Demolition/Renovation/ Construction Debris	19.28%
Special Wastes	5.63%
Grand Total	100.0%

Section 5

1998 STUDY COMPARISON AND DIVERSION OPPORTUNITIES

5.1 Introduction

This section of the report compares the overall results of the 1998 Iowa Statewide Waste Composition Study (1998 Study) to the 2005 Study. In addition, potential opportunities for diverting additional materials from disposal are identified for further analysis.

5.2 Methodology

To compare the overall results of the 1998 Study to the overall results of the 2005 study, we chose two different approaches. First, the mean and confidence intervals for the material categories in each of the two studies were compared to identify statistically significant changes between individual material categories. The 1998 Study methodology included combining previously existing study results with results from two-season, sorting events at five Iowa solid waste facilities. As a result, in conducting the first comparative approach, we compared the MSW composition results from the actual sorting events in 1998 with the results from the sorting events in 2005. From this comparison, we identified where material categories are projected to have either increased or decreased since the 1998 Study. For our second comparative approach, we compared the overall statewide Solid Waste characterization as calculated for both studies. We identified categories where the mean percentage had changed.

5.3 Study Comparison Using Confidence Intervals

For the first comparative approach, provided below are Tables 5-1 through 5-4 that depict the comparison of the 2005 results to the 1998 results. We have included a column for statistical significance. In instances where a check mark is depicted, this represents that the lower and upper bounds of the two studies for the specific material category do not overlap and difference between the percentage of materials exists.

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**Table 5-1
Iowa Statewide
Comparison of Overall MSW Composition**

Materials	2005 Results			1998 Results			Statistical Significance
	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	
Compostable Paper ¹	6.5%	5.7%	7.4%	NA	NA	NA	
High Grade Office Magazines	2.5%	1.9%	3.1%	2.3%	2.0%	2.5%	
Mixed Recyclable Paper	1.8%	1.6%	2.1%	2.5%	2.2%	2.8%	✓
Newsprint	7.0%	6.3%	7.7%	5.4%	5.0%	5.9%	✓
Non-Recyclable Paper ¹	4.0%	3.4%	4.7%	3.3%	2.9%	3.6%	
OCC and Kraft Bags	2.8%	2.3%	3.3%	10.3%	9.4%	11.2%	
Total Paper	33.0%	30.5%	35.7%	32.2%	30.5%	34.0%	
# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.2%	0.1%	0.1%	0.2%	
# 1 PET Beverage ² Containers	0.4%	0.4%	0.5%	0.2%	0.2%	0.3%	✓
# 2 HDPE Containers	1.0%	0.9%	1.2%	1.0%	0.9%	1.1%	
Film/Wrap/Bags	6.6%	5.7%	7.5%	4.8%	4.3%	5.2%	✓
Other # 1 PET Containers ²	0.3%	0.2%	0.3%	NA	NA	NA	✓
Other Plastic Containers	0.4%	0.3%	0.5%	0.8%	0.7%	0.9%	✓
Other Plastic Products	6.0%	5.3%	6.9%	7.5%	6.7%	8.4%	
Total Plastics	14.9%	13.4%	16.6%	14.4%	13.3%	15.6%	
Aluminum Beverage ³ Containers	0.1%	0.1%	0.2%	0.1%	0.0%	0.1%	
Aluminum Deposit Beverage Containers	0.2%	0.1%	0.2%	0.1%	0.1%	0.2%	
Ferrous Food and Beverage Containers	1.0%	0.8%	1.2%	1.7%	1.5%	1.9%	✓
Other Aluminum Containers ³	0.1%	0.1%	0.2%	NA	NA	NA	
Other Ferrous Metals	2.8%	2.3%	3.5%	3.4%	3.0%	3.8%	
Other Non-Ferrous Scrap	0.5%	0.4%	0.6%	0.7%	0.6%	0.8%	
Total Metals	4.7%	4.1%	5.5%	6.0%	5.5%	6.6%	
Blue Glass	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	
Brown Glass	0.0%	0.0%	0.1%	0.2%	0.1%	0.2%	
Clear Glass	0.7%	0.6%	0.9%	1.0%	0.9%	1.1%	
Glass Deposit Containers	0.3%	0.2%	0.4%	0.3%	0.3%	0.4%	
Green Glass	0.1%	0.1%	0.2%	0.1%	0.0%	0.1%	
Other Mixed Cullet	0.5%	0.4%	0.7%	1.1%	0.9%	1.3%	✓
Total Glass	1.7%	1.5%	2.0%	2.6%	2.2%	2.9%	✓
Pumpkins	0.3%	0.2%	0.4%	0.4%	0.3%	0.5%	
Yard Waste	1.4%	1.0%	1.9%	1.3%	1.1%	1.5%	
Total Yard Waste	1.6%	1.3%	2.2%	1.7%	1.4%	2.0%	
Food Waste	10.6%	9.3%	12.2%	10.7%	9.6%	11.8%	

1998 STUDY COMPARISON AND DIVERSION OPPORTUNITIES

**Table 5-1
Iowa Statewide
Comparison of Overall MSW Composition**

Materials	2005 Results			1998 Results			Statistical Significance
	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	
Non-Treated	3.4%	2.7%	4.4%	2.8%	2.3%	3.2%	
Treated	4.6%	3.6%	6.0%	3.6%	3.0%	4.2%	
Total Wood	8.0%	6.5%	9.9%	6.4%	5.5%	7.3%	
Demolition/Renovation/ Construction Debris	5.5%	4.1%	7.6%	4.8%	4.0%	5.7%	
Cell phones and Chargers	0.0%	0.0%	0.0%	NA	NA	NA	
Central Processing Units/Peripherals	0.2%	0.1%	0.3%	NA	NA	NA	
Computer Monitors/TV'S	0.1%	0.0%	0.1%	NA	NA	NA	
Electrical and Household Appliances	2.1%	1.6%	2.9%	1.6%	1.3%	1.9%	
Other Durables	2.7%	1.9%	3.8%	2.2%	1.8%	2.7%	
Total Durable	5.1%	3.9%	6.6%	3.8%	3.2%	4.5%	
Textiles and Leathers	4.9%	4.0%	6.1%	4.2%	3.7%	4.7%	
Diapers	2.4%	2.0%	2.8%	2.3%	2.0%	2.7%	
Rubber	0.5%	0.3%	0.6%	0.8%	0.7%	0.9%	✓
Automotive Products	0.0%	0.0%	0.0%	0.3%	0.2%	0.3%	✓
Household Cleaners	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	✓
Lead Acid Batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mercury Containing Products	0.0%	0.0%	0.0%	NA	NA	NA	
Other Batteries	0.2%	0.2%	0.3%	0.1%	0.1%	0.1%	✓
Other HHM	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	
Paints and Solvent	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	
Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Total HHMS	0.4%	0.4%	0.6%	0.8%	0.7%	0.9%	✓
Sharps	0.0%	0.0%	0.0%	0.7%	0.5%	0.8%	✓
Other Organic	1.5%	1.2%	1.8%	1.7%	1.5%	2.0%	
Other Inorganic	2.4%	1.9%	3.0%	1.7%	1.4%	2.1%	
Fines/Super Mix	2.4%	2.1%	2.8%	5.2%	4.6%	5.6%	✓
Other	0.5%	0.3%	0.8%	NA	NA	NA	
Grand Total	100.0%						

¹ The 1998 results represented the sum of the non-recyclable and compostable paper.

² The sum of the #1 PET Beverage Containers and Other #1 PET Containers in 2005 is equivalent to #1 PET Beverage Containers in the 1998 Study.

³ The sum of the aluminum beverage containers and other aluminum containers in 2005 is equivalent to the aluminum beverage containers in the 1998 Study.

Comparing the overall MSW composition statewide results, the following represents the statistically significant changes where the material type by percentage of the overall stream has increased:

- Mixed recyclable paper;

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- #1 PET Non-deposit beverage containers;
- Film/wrap/bags; and
- Other batteries.

Comparing the overall statewide results, the following represents the statistically significant changes where the material type by percentage of the overall waste stream has decreased:

- Magazines;
- Other plastic containers;
- Ferrous food and beverage containers;
- Glass and the subcategory of other mixed cullet;
- Rubber;
- HHM and the subcategories of automotive products and household cleaners; and
- Sharps.

We have also compared the generator results -- residential, commercial, and mixed. These three generators compose the overall MSW composition results. Through this comparison, we may be able to draw some additional insight as to which generators are influencing the overall outcome of the results.

1998 STUDY COMPARISON AND DIVERSION OPPORTUNITIES

Table 5-2 Iowa Statewide Comparison of Residential Composition							
Materials	2005 Results			1998 Results			Statistical Significance
	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	
Compostable Paper	7.9%	6.4%	9.7%	NA	NA	NA	
High Grade Office	1.5%	1.2%	2.0%	1.8%	1.4%	2.1%	
Magazines	2.4%	1.9%	3.0%	3.2%	2.7%	3.7%	
Mixed Recyclable Paper	7.9%	6.7%	9.2%	6.1%	5.4%	6.9%	
Newsprint	5.7%	4.3%	7.3%	4.2%	3.5%	4.9%	
Non-Recyclable Paper ¹	1.9%	1.5%	2.3%	9.6%	8.4%	10.8%	
OCC and Kraft Bags	3.8%	2.8%	4.9%	4.1%	3.5%	4.8%	
Total Paper	31.1%	27.5%	34.8%	28.9%	26.2%	31.7%	
# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.3%	0.2%	0.1%	0.2%	
# 1 PET Beverage ² Containers	0.5%	0.4%	0.6%	0.3%	0.2%	0.4%	✓
# 2 HDPE Containers	1.3%	1.0%	1.6%	0.9%	0.8%	1.0%	
Film/Wrap/Bags	5.3%	4.3%	6.5%	3.9%	3.4%	4.5%	
Other # 1 PET Containers ²	0.4%	0.3%	0.6%	NA	NA	NA	✓
Other Plastic Containers	0.5%	0.4%	0.6%	0.7%	0.6%	0.9%	
Other Plastic Products	5.0%	4.0%	6.2%	4.4%	3.9%	5.0%	
Total Plastics	13.2%	10.9%	15.8%	10.4%	9.3%	11.4%	
Aluminum Beverage ³ Containers	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	
Aluminum Deposit Beverage Containers	0.2%	0.1%	0.3%	0.2%	0.1%	0.2%	
Ferrous Food and Beverage Containers	1.2%	1.0%	1.5%	1.3%	1.1%	1.6%	
Other Aluminum Containers ³	0.1%	0.1%	0.1%	NA	NA	NA	
Other Ferrous Metals	2.0%	1.4%	2.7%	4.6%	3.6%	5.7%	✓
Other Non-Ferrous Scrap	0.7%	0.5%	0.9%	1.0%	0.8%	1.3%	
Total Metals	4.2%	3.3%	5.3%	7.2%	6.1%	8.3%	✓
Blue Glass	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	
Brown Glass	0.1%	0.0%	0.1%	0.2%	0.2%	0.3%	✓
Clear Glass	1.0%	0.8%	1.3%	1.4%	1.2%	1.7%	
Glass Deposit Containers	0.3%	0.2%	0.4%	0.4%	0.3%	0.5%	
Green Glass	0.1%	0.1%	0.2%	0.1%	0.0%	0.1%	
Other Mixed Cullet	0.9%	0.5%	1.4%	0.4%	0.3%	0.5%	
Total Glass	2.4%	1.9%	3.1%	2.5%	2.2%	2.9%	
Pumpkins	0.1%	0.1%	0.2%	0.9%	0.6%	1.3%	✓
Yard Waste	1.6%	0.9%	2.5%	1.9%	1.4%	2.5%	
Total Yard Waste	1.7%	1.0%	2.6%	2.9%	2.1%	3.7%	
Food Waste	11.2%	9.2%	13.6%	10.8%	9.2%	12.4%	

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**Table 5-2
Iowa Statewide
Comparison of Residential Composition**

Materials	2005 Results			1998 Results			Statistical Significance
	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	
Non-Treated	2.2%	1.1%	3.8%	1.4%	1.0%	1.8%	
Treated	4.9%	2.9%	7.8%	5.0%	3.7%	6.5%	
Total Wood	7.2%	4.4%	10.8%	6.4%	4.8%	8.1%	
Demolition/Renovation/ Construction Debris	5.4%	2.5%	10.0%	4.0%	2.9%	5.3%	
Cell phones and Chargers	0.0%	0.0%	0.0%	NA	NA	NA	
Central Processing Units/Peripherals	0.0%	0.0%	0.1%	NA	NA	NA	
Computer Monitors/TV'S	0.0%	0.0%	0.0%	NA	NA	NA	
Electrical and Household Appliances	2.0%	1.1%	3.4%	2.3%	1.7%	3.0%	
Other Durables	1.6%	1.0%	2.7%	4.1%	2.8%	5.7%	✓
Total Durable	3.7%	2.5%	5.4%	6.4%	4.7%	8.4%	
Textiles and Leathers	5.4%	4.0%	7.1%	5.5%	4.6%	6.4%	
Diapers	4.1%	3.1%	5.4%	3.7%	3.0%	4.5%	
Rubber	0.1%	0.1%	0.1%	0.7%	0.5%	0.9%	✓
Automotive Products	0.0%	0.0%	0.0%	0.3%	0.2%	0.4%	✓
Household Cleaners	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	
Lead Acid Batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mercury Containing Products	0.0%	0.0%	0.0%	NA	NA	NA	
Other Batteries	0.3%	0.2%	0.5%	0.1%	0.1%	0.2%	
Other HHM	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	✓
Paints and Solvent	0.2%	0.1%	0.4%	0.2%	0.1%	0.2%	
Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Total HHMS	0.6%	0.4%	0.9%	0.8%	0.7%	1.0%	
Sharps	0.0%	0.0%	0.0%	0.4%	0.3%	0.6%	✓
Other Organic	2.2%	1.6%	3.0%	1.8%	1.4%	2.3%	
Other Inorganic	3.9%	2.8%	5.4%	1.9%	1.4%	2.4%	✓
Fines/Super Mix	3.6%	2.8%	4.6%	5.8%	5.0%	6.6%	✓
Other	0.0%	0.0%	0.0%	NA	NA	NA	
Grand Total	100.0%			100.0%			

¹ The 1998 results represented the sum of the non-recyclable and compostable paper.

² The sum of the #1 PET Beverage Containers and Other #1 PET Containers in 2005 is equivalent to #1 PET Beverage Containers in the 1998 Study.

³ The sum of the aluminum beverage containers and other aluminum containers in 2005 is equivalent to the aluminum beverage containers in the 1998 Study.

1998 STUDY COMPARISON AND DIVERSION OPPORTUNITIES

**Table 5-3
Iowa Statewide
Comparison of ICI Composition**

Materials	2005 Results			1998 Results			Statistical Significance
	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	
Compostable Paper ¹	5.4%	4.3%	6.8%	NA	NA	NA	✓
High Grade Office	3.4%	2.4%	4.6%	1.9%	1.5%	2.3%	
Magazines	1.1%	0.8%	1.5%	1.2%	0.9%	1.5%	
Mixed Recyclable Paper	6.0%	5.0%	7.2%	4.0%	3.2%	4.8%	
Newsprint	2.3%	1.7%	3.2%	1.5%	1.1%	1.8%	
Non-Recyclable Paper ¹	3.4%	2.7%	4.5%	10.7%	8.7%	12.8%	
OCC and Kraft Bags	12.4%	9.8%	15.3%	13.2%	11.0%	15.5%	
Total Paper	34.1%	29.6%	38.8%	32.4%	28.8%	36.1%	
# 1 PET Deposit Beverage Containers	0.2%	0.1%	0.3%	0.1%	0.1%	0.1%	✓
# 1 PET Beverage ² Containers	0.4%	0.3%	0.5%	0.2%	0.1%	0.2%	
# 2 HDPE Containers	0.8%	0.6%	1.0%	1.1%	0.8%	1.3%	
Film/Wrap/Bags	7.6%	6.0%	9.4%	4.6%	3.8%	5.5%	
Other # 1 PET Containers ²	0.1%	0.1%	0.2%				
Other Plastic Containers	0.2%	0.2%	0.3%	1.1%	0.8%	1.4%	
Other Plastic Products	6.8%	5.5%	8.4%	11.5%	9.0%	14.2%	
Total Plastics	16.2%	13.5%	19.1%	18.5%	15.5%	21.7%	
Aluminum Beverage ³ Containers	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%	✓
Aluminum Deposit Beverage Containers	0.1%	0.1%	0.2%	0.1%	0.1%	0.2%	
Ferrous Food and Beverage Containers	0.8%	0.5%	1.2%	2.0%	1.5%	2.6%	
Other Aluminum Containers ³	0.1%	0.0%	0.1%	NA	NA	NA	
Other Ferrous Metals	3.4%	2.4%	4.6%	2.4%	1.8%	3.1%	
Other Non-Ferrous Scrap	0.4%	0.3%	0.5%	0.7%	0.5%	0.9%	
Total Metals	4.9%	3.8%	6.2%	5.4%	4.3%	6.5%	
Blue Glass	0.0%	0.0%	0.0%	0.0%	0%	0.0%	✓
Brown Glass	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	
Clear Glass	0.4%	0.3%	0.6%	0.6%	0.4%	0.7%	
Glass Deposit Containers	0.2%	0.1%	0.3%	0.3%	0.2%	0.4%	
Green Glass	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	
Other Mixed Cullet	0.3%	0.2%	0.5%	2.3%	1.5%	3.1%	
Total Glass	1.0%	0.8%	1.4%	3.2%	2.3%	4.3%	
Pumpkins	0.4%	0.2%	0.8%	0.1%	0.0%	0.1%	✓
Yard Waste	0.7%	0.4%	1.1%	0.8%	0.5%	1.0%	
Total Yard Waste	1.1%	0.8%	1.7%	0.8%	0.6%	1.1%	
Food Waste	10.3%	8.1%	13.1%	10.2%	8.2%	12.5%	

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Table 5-3
Iowa Statewide
Comparison of ICI Composition

Materials	2005 Results			1998 Results			Statistical Significance
	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	
Non-Treated	4.7%	3.4%	6.3%	4.7%	3.5%	6.1%	
Treated	4.6%	3.2%	6.6%	3.8%	2.7%	5.0%	
Total Wood	9.3%	7.0%	12.2%	8.5%	6.5%	10.7%	
Demolition/Renovation/ Construction Debris	5.6%	3.7%	8.2%	6.1%	4.4%	8.2%	
Cell phones and Chargers	0.0%	0.0%	0.0%	NA	NA	NA	
Central Processing Units/Peripherals	0.1%	0.0%	0.1%	NA	NA	NA	
Computer Monitors/TV'S	0.0%	0.0%	0.0%	NA	NA	NA	
Electrical and Household Appliances	2.4%	1.4%	3.6%	1.3%	0.9%	1.7%	
Other Durables	4.0%	2.5%	6.1%	1.4%	0.9%	1.9%	✓
Total Durables	6.4%	4.2%	9.3%	2.6%	1.8%	3.6%	✓
Textiles and Leathers	4.8%	3.2%	6.8%	2.5%	1.9%	3.2%	
Diapers	0.9%	0.6%	1.2%	0.8%	0.6%	1.0%	
Rubber	0.7%	0.5%	1.0%	1.0%	0.8%	1.4%	
Automotive Products	0.0%	0.0%	0.1%	0.3%	0.2%	0.3%	✓
Household Cleaners	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Lead Acid Batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mercury Containing Products	0.0%	0.0%	0.0%	NA	NA	NA	
Other Batteries	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	✓
Other HHM	0.1%	0.0%	0.1%	0.1%	0.1%	0.2%	
Paints and Solvent	0.0%	0.0%	0.1%	0.3%	0.2%	0.3%	✓
Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Total HHMS	0.3%	0.2%	0.4%	0.8%	0.6%	1.0%	✓
Sharps	0.0%	0.0%	0.0%	0.8%	0.6%	1.1%	✓
Other Organic	0.9%	0.6%	1.3%	1.7%	1.2%	2.2%	
Other Inorganic	1.3%	0.9%	2.0%	1.9%	1.2%	2.6%	
Fines/Super Mix	1.4%	1.2%	1.8%	2.9%	2.2%	3.5%	✓
Other	0.8%	0.4%	1.3%	NA	NA	NA	
Grand Total	100.0%			100.0%			

¹ The 1998 results represented the sum of the non-recyclable and compostable paper.

² The sum of the #1 PET Beverage Containers and Other #1 PET Containers in 2005 is equivalent to #1 PET Beverage Containers in the 1998 Study.

³ The sum of the aluminum beverage containers and other aluminum containers in 2005 is equivalent to the aluminum beverage containers in the 1998 Study.

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**Table 5-4
Iowa Statewide
Comparison of Mixed Composition**

Materials	2005 Results			1998 Results			Statistical Significance
	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	
Compostable Paper ¹	6.9%	6.4%	7.6%	NA	NA	NA	
High Grade Office	1.6%	1.3%	2.1%	2.3%	2.0%	2.5%	
Magazines	2.6%	2.2%	3.2%	2.5%	2.2%	2.8%	
Mixed Recyclable Paper	8.0%	7.2%	8.9%	5.4%	5.0%	5.9%	✓
Newsprint	5.6%	4.9%	6.6%	3.3%	2.9%	3.6%	✓
Non-Recyclable Paper ¹	2.5%	1.9%	3.5%	10.3%	9.4%	11.2%	
OCC and Kraft Bags	6.6%	4.7%	9.4%	8.5%	7.7%	9.4%	
Total Paper	33.9%	30.8%	37.2%	32.2%	30.5%	34.0%	
# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.3%	0.1%	0.1%	0.2%	
# 1 PET Beverage ² Containers	0.5%	0.4%	0.7%	0.2%	0.2%	0.3%	✓
# 2 HDPE Containers	1.1%	1.0%	1.3%	1.0%	0.9%	1.1%	
Film/Wrap/Bags	6.1%	5.5%	6.7%	4.8%	4.3%	5.2%	✓
Other # 1 PET Containers ²	0.3%	0.3%	0.4%	NA	NA	NA	✓
Other Plastic Containers	0.7%	0.5%	1.1%	0.8%	0.7%	0.9%	
Other Plastic Products	5.5%	4.6%	6.9%	7.5%	6.7%	8.4%	
Total Plastics	14.5%	13.2%	15.9%	14.4%	13.3%	15.6%	
Aluminum Beverage ³ Containers	0.3%	0.1%	0.9%	0.1%	0.0%	0.1%	
Aluminum Deposit Beverage Containers	0.2%	0.1%	0.3%	0.1%	0.1%	0.2%	
Ferrous Food and Beverage Containers	1.0%	0.8%	1.2%	1.7%	1.5%	1.9%	✓
Other Aluminum Containers ³	0.3%	0.1%	0.6%	NA	NA	NA	
Other Ferrous Metals	3.0%	2.2%	4.4%	3.4%	3.0%	3.8%	
Other Non-Ferrous Scrap	0.5%	0.4%	0.7%	0.7%	0.6%	0.8%	
Total Metals	5.3%	4.3%	6.6%	6.0%	5.5%	6.6%	
Blue Glass	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	
Brown Glass	0.1%	0.0%	0.1%	0.2%	0.1%	0.2%	
Clear Glass	1.0%	0.7%	1.5%	1.0%	0.9%	1.1%	
Glass Deposit Containers	0.5%	0.3%	1.0%	0.3%	0.3%	0.4%	
Green Glass	0.2%	0.1%	0.5%	0.1%	0.0%	0.1%	
Other Mixed Cullet	0.6%	0.4%	0.9%	1.1%	0.9%	1.3%	
Total Glass	2.3%	1.9%	3.0%	2.6%	2.2%	2.9%	
Pumpkins	0.1%	0.0%	0.2%	0.4%	0.3%	0.5%	✓
Yard Waste	2.8%	1.7%	5.0%	1.3%	1.1%	1.5%	
Total Yard Waste	2.9%	1.8%	5.1%	1.7%	1.4%	2.0%	
Food Waste	10.1%	8.7%	12.0%	10.7%	9.6%	11.8%	

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**Table 5-4
Iowa Statewide
Comparison of Mixed Composition**

Materials	2005 Results			1998 Results			Statistical Significance
	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	
Non-Treated	1.9%	1.3%	3.0%	2.8%	2.3%	3.2%	
Treated	3.9%	2.3%	6.8%	3.6%	3.0%	4.2%	
Total Wood	5.8%	3.9%	8.7%	6.4%	5.5%	7.3%	
Demolition/Renovation/ Construction Debris	5.4%	3.5%	8.8%	4.8%	4.0%	5.7%	
Cell phones and Chargers	0.0%	0.0%	0.0%	NA	NA	NA	
Central Processing Units/Peripherals	0.9%	0.5%	1.8%	NA	NA	NA	
Computer Monitors/TV'S	0.3%	0.1%	0.9%	NA	NA	NA	
Electrical and Household Appliances	1.9%	1.2%	2.9%	1.6%	1.3%	1.9%	
Other Durables	0.9%	0.6%	1.5%	2.2%	1.8%	2.7%	✓
Total Durable	3.9%	2.9%	5.5%	3.8%	3.2%	4.5%	
Textiles and Leathers	4.3%	3.4%	5.6%	4.2%	3.7%	4.7%	
Diapers	3.3%	2.8%	4.0%	2.3%	2.0%	2.7%	✓
Rubber	0.4%	0.2%	0.6%	0.8%	0.7%	0.9%	✓
Automotive Products	0.0%	0.0%	0.0%	0.3%	0.2%	0.3%	✓
Household Cleaners	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	
Lead Acid Batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mercury Containing Products	0.0%	0.0%	0.0%	NA	NA	NA	
Other Batteries	0.2%	0.2%	0.4%	0.1%	0.1%	0.1%	✓
Other HHM	0.2%	0.1%	0.4%	0.1%	0.1%	0.1%	
Paints and Solvent	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	
Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Total HHMS	0.6%	0.4%	0.8%	0.8%	0.7%	0.9%	
Sharps	0.0%	0.0%	0.0%	0.7%	0.5%	0.8%	✓
Other Organic	1.8%	1.4%	2.3%	1.7%	1.5%	2.0%	
Other Inorganic	2.4%	1.9%	3.4%	1.7%	1.4%	2.1%	
Fines/Super Mix	2.7%	2.4%	3.1%	5.2%	4.6%	5.6%	✓
Other	0.4%	0.1%	1.0%	NA	NA	NA	
Grand Total	100.0%						

¹ The 1998 results represented the sum of the non-recyclable and compostable paper.

² The sum of the #1 PET Beverage Containers and Other #1 PET Containers in 2005 is equivalent to #1 PET Beverage Containers in the 1998 Study.

³ The sum of the aluminum beverage containers and other aluminum containers in 2005 is equivalent to the aluminum beverage containers in the 1998 Study.

Per review of the comparative results by generator type, the specific material categories identified in Table 5-1 with statistically significant increases were evaluated at the generator-specific level to determine where statistically significant increases

occurred. Please note SS represents "statistically significant" in the discussion below. The evaluation reflects the following:

- Mixed recyclable paper – Residential (trending up), ICI (SS increase), and Mixed (SS increase);
- #1 PET Non-deposit beverage containers – Residential, ICI, and Mixed (all three generator types SS increase);
- Film/wrap/bags – Residential (trending upward), ICI (SS increase) and Mixed (SS increase); and
- Other Batteries – Residential (trending upward), ICI (SS increase) and Mixed (SS increase).

These results suggest the proportion that these materials compose of the overall MSW stream have increased.

The material categories in Table 5-1 with statistically significant decreases also were evaluated at the generator-specific level to determine where statistically significant decreases occurred. The evaluation reflects the following:

- Magazines – Residential (trending downward), ICI (no change), and Mixed (no change);
- Other plastic containers – Residential (trending downward), ICI (SS decrease), mixed (no change);
- Ferrous food and beverage containers – Residential (no change), ICI (SS decrease), and Mixed (SS decrease);
- Glass and the subcategory of other mixed cullet; - Residential (no change), ICI (SS decrease), and Mixed [Other mixed cullet - trending downward; Total Glass – no change];
- Rubber – Residential (SS decrease), ICI (trending downward), and Mixed (SS decrease);
- HHM and subcategory of automotive products – Residential (trending downwards), ICI (SS decrease), and Mixed (no change); subcategory of automotive products (SS decrease) for all three generator types;
- Sharps (SS decrease for all three generator types); and
- Brown glass – even though the overall MSW characterization results did not reflect a SS decrease in this subcategory, both residential and ICI generator results reflected a SS decrease in the percentage by weight.

Based upon the above analysis, it is our opinion that the proportion of ferrous food and beverage containers, glass, rubber, HHM, and sharps are decreasing as a percentage of the overall MSW waste stream. The trend for the material categories of magazines and other plastic containers is not certain based on our evaluation. The reduction in the percentage of glass appears to be primarily a result of a decrease in the percentage of brown glass in the residential and ICI waste streams and a decrease in the percentage of other mixed cullet in the ICI streams. As for the HHM, the overall

small quantities in the waste stream by weight provide some measurement challenges when comparing studies. However, it appears that the percentage of HHM composing the waste stream have decreased primarily as a result of the statistically significant decrease in the percentage of automotive products. Contrastingly, the subcategory of other batteries does reflect a statistically significant increase. This warrants further investigation.

5.4 Study Comparison of Overall Solid Waste Composition

For the second comparative approach, provided below is Table 5-5 depicting a comparison of the mean percentage by material category for the statewide solid waste composition results for the 2005 Study and the 1998 Study. We have applied the mean percentages to the quantities of solid waste materials landfilled in Iowa for both FY 1998 and FY 2005 as reported by the solid waste facilities to the IDNR.

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Table 5-5 Iowa Statewide Solid Waste Composition				
Materials	2005		1998	
	Mean	Quantities (tons)	Mean	Quantities (tons)
Compostable Paper ¹	5.15%	138,005	NA	NA
High Grade Office	1.95%	52,254	1.8%	45,316
Magazines	1.44%	38,588	1.9%	47,834
Mixed Recyclable Paper	5.53%	148,187	2.2%	55,387
Newsprint	3.18%	85,214	3.0%	75,527
Non-Recyclable Paper ¹	2.18%	58,417	7.6%	191,336
OCC and Kraft Bags	6.74%	180,612	7.1%	178,748
Total Paper	26.17%	701,277	25.8%	649,536
# 1 PET Deposit Beverage Containers	0.16%	4,288	0.1%	2,518
# 1 PET Beverage Containers ²	0.34%	9,111	0.2%	5,035
# 2 HDPE Containers	0.80%	21,438	0.7%	17,623
Film/Wrap/Bags	5.20%	139,344	4.2%	105,738
Other # 1 PET Containers ²	0.21%	5,627	NA	NA
Other Plastic Containers	0.31%	8,307	0.6%	15,105
Other Plastic Products	4.77%	127,822	5.6%	140,985
Total Plastics	11.78%	315,669	11.1%	279,451
Aluminum Beverage Containers ³	0.11%	2,948	0.1%	2,518
Aluminum Deposit Beverage Containers	0.13%	3,484	0.1%	2,518
Ferrous Food and Beverage Containers	0.78%	20,902	0.8%	20,141
Other Aluminum Containers ³	0.08%	2,144	NA	NA
Other Ferrous Metals	2.24%	60,025	2.8%	70,492
Other Non-Ferrous Scrap	0.39%	10,451	0.4%	10,070
Total Metals	3.74%	100,221	4.1%	103,221
Blue Glass	0.03%	804	0.0%	-
Brown Glass	0.03%	804	0.1%	2,518
Clear Glass	0.57%	15,274	0.8%	20,141
Glass Deposit Containers	0.21%	5,627	0.3%	7,553
Green Glass	0.09%	2,412	0.1%	2,518
Other Mixed Cullet	0.43%	11,523	0.5%	12,588
Total Glass	1.36%	36,444	1.7%	42,799
Pumpkins	0.21%	5,627	0.3%	7,553
Yard Waste	1.07%	28,673	1.2%	30,211
Total Yard Waste	1.28%	34,300	1.3%	32,729
Food Waste	8.40%	225,095	7.4%	186,301
Non-Treated	2.69%	72,084	2.4%	60,422
Treated	3.64%	97,541	3.1%	78,045
Total Wood	6.60%	176,860	9.4%	236,653

**Table 5-5
Iowa Statewide
Solid Waste Composition**

Materials	2005		1998	
	Mean	Quantities (tons)	Mean	Quantities (tons)
Demolition/Renovation/ Construction Debris	19.28%	516,646	16.0%	402,813
Cell phones and Chargers	0.00%	-	NA	NA
Central Processing Units/Peripherals	0.15%	4,020	NA	NA
Computer Monitors/TV'S	0.04%	1,072	NA	NA
Electrical and Household Appliances	1.70%	45,555	1.0%	25,176
Other Durables	2.12%	56,810	2.0%	50,352
Total Durable	4.02%	107,724	2.1%	52,869
Textiles and Leathers	3.88%	103,972	2.4%	60,422
Diapers	1.89%	50,646	1.5%	37,764
Rubber	0.36%	9,647	0.5%	12,588
Automotive Products	0.02%	536	0.2%	5,035
Household Cleaners	0.01%	268	0.0%	-
Lead Acid Batteries	0.00%	-	0.0%	-
Mercury Containing Products	0.00%	-	NA	NA
Other Batteries	0.16%	4,288	0.0%	-
Other HHM	0.06%	1,608	0.1%	2,518
Paints and Solvent	0.09%	2,412	0.1%	2,518
Pesticides, Herbicides, Fungicides	0.01%	268	0.0%	-
Total HHMS	0.35%	9,379	0.5%	12,588
Sharps	0.01%	268	0.6%	15,105
Other Organic	1.18%	31,620	1.7%	42,799
Other Inorganic	1.88%	50,378	1.3%	32,729
Fines/Super Mix	1.89%	50,646	3.6%	90,633
Other	0.31%	8,307	NA	NA
Special Wastes	5.63%	150,867	10.7%	269,381
Grand Total	100.0%	2,679,700	100.0%	2,517,581

¹ The 1998 results represented the sum of the non-recyclable and compostable paper.

² The sum of the #1 PET Beverage Containers and Other #1 PET Containers in 2005 is equivalent to #1 PET Beverage Containers in the 1998 Study.

³ The sum of the aluminum beverage containers and other aluminum containers in 2005 is equivalent to the aluminum beverage containers in the 1998 Study.

5.5 Diversion Opportunities

From review of the comparative analyses provided above, the disposed solid waste stream continues to be composed of materials that may be diverted through reuse, recycling, and composting.

By itself, the paper component includes more than 701,300 tons of fiber that are recyclable, including high grade, magazines, newsprint, OCC, and mixed recyclable

paper. The two largest material categories composing the primary category of paper are OCC with approximately 180,600 tons and mixed recyclable paper with approximately 148,200 tons. The 2005 Study results also shed some light on the portion of the non-recyclable fiber fraction that could be considered compostable. Of the approximately 196,400 tons of paper that are non-recyclable, more than 70% were categorized as compostable. Therefore, the disposed paper component of the MSW stream includes a total of more than 642,800 tons of materials that could be recovered through composting and recycling. This equates to nearly 24% of the total materials landfilled in FY 2005.

Emphasis should be placed on promoting the diversion of OCC since it is easily recognizable and has well established end use markets. The facility specific results included in Table 4-6 and detailed in Appendix B reflect a statistically significant difference between the mean percentage of OCC disposed in Cedar Rapids/Linn County and the other five facilities. It is likely that this is attributable to the OCC diversion efforts associated with the OCC landfill disposal ban. Similar waste management public policy should be considered in other planning areas throughout the state of Iowa.

The growing mixed recyclable paper fraction should also be targeted and end use markets enhanced for this portion of the fiber stream. The compostable paper fraction could potentially be combined with other compostable materials, such as food waste, for processing and recovery as compost by-product.

The remainder of the disposed MSW stream offers some additional recycling and composting opportunities. The top five materials based on both their potential for recovery and the total quantities disposed included the following:

- Demolition/construction debris (516,600 tons). Many communities and supporting state program recovery efforts around the U.S. focus on the recoverable portion of this substream including metals, carpet, shingles, wood, drywall, and OCC. Please note that the MSW results only represent the portion of this substream that is commingled with MSW and transported to MSW landfills for disposal. The dedicated loads of demolition/construction debris were included as part of the Solid Waste composition results. Nearly 20% of the Solid Waste stream is estimated to be composed of demolition/renovation/construction debris. Approximately 5.5% of the MSW stream is composed of demolition/construction debris. Existing demolition/construction debris recovery programs and infrastructure should be expanded to other regions of Iowa that do not have programs and infrastructure.
- Food waste (225,000 tons). The ability to recover food waste is generally tied to the cost effectiveness of collection and processing and the extent of contamination that accompanies any collection program. Focusing on large generators with homogeneous waste materials is recommended.
- Film/wrap/bags (139,300 tons). End use markets exist for the recovery of plastic film. The key barrier precluding additional recovery is the extensive amount of contamination generally accompanying this type of material discard.

- Textiles and leather (104,900 tons). This category of materials also has been given additional consideration by communities throughout the U.S. within the last decade because of the establishment of viable end markets for recovery and reuse of clothing and rags. Promotion of additional recovery should be tied directly to identifying sustainable end markets.
- Non-treated wood (72,000 tons). This subcategory of wood is primarily associated with pallets and crates that are prevalent in the ICI stream. The largest barrier associated with the recovery of this material is generally the extent of contamination. Recently, this portion of the MSW stream is being considered as a viable feedstock for biomass to energy facilities in several locations in the U.S. because of its potential BTU value.

5.6 Conclusions

Some of the key conclusions that can be drawn from the above analysis include the following:

1. Recyclable mixed paper, PET #1 plastic, and film/wrap/bags compose a larger percentage of the MSW stream in FY 2005 as compared to FY 1998.
2. The percentage of brown glass and mixed glass cullet composing the MSW stream is trending downward and as a result the proportion of glass in the overall MSW stream is decreasing.
3. The overall percentage and actual quantities of HHM composing the MSW stream have decreased between FY 1998 and 2005. It is likely that this is attributable to the more comprehensive HHM programs that have been put in place since 1998, including the number of permanent regional collection centers.
4. OCC (180,600 tons), mixed recyclable paper (148,200 tons), and film/wrap/bags (139,300) represent some of the greatest opportunities for source reduction and recycling in the Solid Waste stream.
5. Food waste (225,000 tons) and compostable paper (138,000 tons) represent some of the greatest opportunities for source reduction and recycling through composting in the Solid Waste stream.
6. Excluding construction and demolition materials, source reduction, recycling and composting of the materials reflecting the greatest opportunities as identified above represent more than 30% of the total Solid Waste stream or more than 830,000 tons of MSW.
7. Demolition/renovation/construction debris represents a unique materials recovery opportunity. Nearly 20% of the Solid Waste stream is estimated to be composed of these materials. Some of the materials composing this substream are recoverable. Additional evaluation of the scope of recovery opportunities from this substream is recommended.

GLOSSARY

90% Confidence Interval – represents that there is a 90% level of confidence that the true mean for the overall population falls within the upper and lower bounds of the confidence interval.

Confidence Interval – the upper and lower limits of the “actual” mean for the overall population.

Generator Type – major waste-generating categories, including residential, industrial/commercial/institutional (ICI) and mixed.

Industrial/Commercial/Institutional (ICI) Waste – waste generated by non-residential waste generators.

Mixed Waste– waste from both residential and non-residential waste generators.

Mean – the mathematical average or average percent of material composing the MSW stream by weight.

Municipal Solid Waste (MSW) – garbage, refuse and other solid waste from residential, commercial, industrial and community activities that the generator of the waste aggregates for collection. MSW does not include auto hulks, street sweepings, ash, dedicated construction debris, mining waste, sludges, agricultural wastes, and other materials collected, processed and disposed of as separate waste streams.

Residential Waste – waste generated from single-family or multi-family dwelling units.

Solid Waste – garbage, refuse, rubbish, and other similar discarded solid or semisolid materials, including but not limited to such materials resulting from industrial, commercial, agricultural, and domestic activities. Solid waste does not include hazardous waste as defined in section 455B.411 or source, special nuclear, or by-product material as defined in the Atomic Energy Act of 1954, as amended to January 1, 1979, or petroleum contaminated soil which has been remediated to acceptable state or federal standards. However, it does include special wastes.

Special Waste – any industrial process waste, pollution control waste, or toxic waste which presents a threat to human health or the environment or a waste with inherent properties which make the disposal of the waste in a sanitary landfill difficult to manage. Special waste does not include domestic, office, commercial, medical, or industrial waste that does not require special handling or limitations on its disposal. Special waste does not include hazardous wastes which are regulated under the federal Resource Conservation and Recovery Act (RCRA), hazardous waste as defined in Iowa Code section 455B.411, subsection 3, or hazardous wastes included in the list compiled in accordance with Iowa Code section 455B.464.

Appendix A
STUDY DESIGN SUPPORTING DOCUMENTS

Material Definitions

Waste Sort Categories – Iowa Statewide Characterization Study - 2005

PAPER	
Newsprint	Black and white newspaper news print including other paper normally distributed inside a newspaper such as colored advertisements, comics, fliers, tabloids.
Magazines	All magazines plus promotional materials printed on slick paper.
High Grade Office	High grade continuous form computer paper, white paper including bond, photocopy or notebook paper and colored ledger paper primarily from offices.
OCC and Kraft Bags	Uncoated old corrugated cardboard (OCC) with a wavy core and not contaminated with other materials such as a wax or plastic coating wood. Includes brown paper bags.
Mixed Recyclable Paper	Box board - Uncoated; primarily used for boxes (such as cereal boxes and egg cartons), envelopes with and without windows, toilet paper cores and other mixed recyclable paper. Includes books.
Non-Recyclable Paper	Plastic or metal coated paper.
Compostable Paper	Paper products including wax-coated paper, napkins, paper towels, frozen food packaging, tissues, paper plates, cups, and pizza boxes.

PLASTICS	
#1 Polyethylene Terephthalate (PET) Beverage Containers	Plastic containers coded #1 used for containing water, fruit juice, sports drink, or ice tea without an Iowa deposit label and are no more than 3 liters (.8 gallons) and no less than 5 ounces in size
#1 PET Deposit Beverage Containers	Plastic containers coded #1 with an Iowa deposit
Other #1 PET Containers	Plastic containers coded #1 <u>not</u> used for containing water, fruit juice, sports drink, ice tea, wine, liquor, beer, soda water or similar carbonated drinks without an Iowa deposit label and all PET containers larger than 3 liters (.8 gallons) and smaller than 5 ounces regardless of contents
#2 High Density Polyethylene (HDPE) Containers	Plastic containers such as milk jugs, shampoo bottles, and laundry detergent bottles coded #2.
Other Plastic Containers	Plastic Containers coded #3, #4, #5, #6, #7.
Other Plastic Products	End-user products including molded toys, extruded pipes and hoses, clothes hangers, cleaning tools and razors.
Film/Wrap/Bags	Trash bags, grocery bags, storage bags, sheet film plastic.

METALS	
Aluminum Beverage Containers	All beverage containers made from aluminum used for containing water, fruit juice, sports drink, or ice tea without an Iowa deposit label and are no more than 3 liters (.8 gallons) and no less than 5 ounces in size.
Aluminum Deposit Beverage Containers	All beverage containers made from aluminum with an Iowa deposit label.

Waste Sort Categories – Iowa Statewide Characterization Study - 2005

Other Aluminum Containers	Aluminum containers not used for containing water, fruit juice, sports drink, ice tea, wine, liquor, beer, soda water or similar carbonated soft drinks without an Iowa deposit label and all containers larger than 3 liters (.8 gallons) and smaller than 5 ounces regardless of contents.
Ferrous Food and Beverage	Food and beverage containers composed primarily of iron.
Other Ferrous Metals	Ferrous metal besides containers, including clothes hangers, sheet metal products, pipes, miscellaneous metal scraps, and other magnetic metal items.
Other Non-Ferrous Scrap	Other aluminum scraps besides beverage containers. Also includes other non-ferrous metal scrap such as brass, copper, or other non-magnetic metal.

GLASS	Note: All wine, liquor, and beer containers are subject to the Iowa bottle deposit. Out-of-state imports may comprise the non-deposit glass category.
Clear Glass	All clear glass food, beverage, wine, liquor and beer containers.
Green Glass	All green glass food, beverage, wine, liquor and beer containers.
Blue Glass	All blue glass food, beverage, wine, liquor and beer containers.
Brown Glass	All brown glass food, beverage, wine, liquor and beer containers.
Glass Deposit Containers	All clear, green, blue and brown glass food, beverage, wine, liquor and beer containers with an Iowa Deposit label.
Other Mixed Cullet	Glass items other than food and beverage containers. Includes ceramics, drinking glasses, glass plates, cooking utensils, ash trays, mirrors, or perfume bottles.

Yard Waste	Debris such as grass clippings, leaves, garden waste, brush, and trees. Yard waste does include tree stumps.
Pumpkins	Seasonal item during fall sorts.

Food Waste	Food preparation wastes, food scraps, spoiled food.
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WOOD	
Non-Treated	Pallets, crates, and wood not defined below as treated.
Treated	Wood that is painted, stained, treated for exterior use, or glued such as plywood.

Demolition/Renovation/ Construction Debris	Waste building materials including, metals, and rubble which result from construction or demolition of structures. Such waste shall also include carpets, rugs, bricks, mortar, shingles, and drywall. Wood should be sorted into the wood categories.
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Waste Sort Categories – Iowa Statewide Characterization Study - 2005

DURABLES	
Electrical and Household Appliances	Toasters, stereos, other small appliances and electronic equipment.
Central Processing Units/Peripherals	Computer components except for monitors.
Computer Monitors/TV's	Self-explanatory.
Cell Phones and Chargers	Self-explanatory.
Other Durables	Household furniture and mattresses.
Textiles and Leathers	Clothing and apparel, shop rags, blankets, shoes, leather products such as wallets, purses, belts and scrap leather.
Diapers	Adult or infant disposable diapers, clean or soiled.
Rubber	Rubber tubing, mats, hose, tires and some shoes.
HHM	Substances categorized by the U.S. Environmental Protection Agency (EPA) as: Corrosive, destroy human tissue or corrode metal; flammable, easily ignitable; toxic, poisonous; reactive, react violently when exposed to heat, sudden shock, pressure or other chemicals.
Automotive Products	
Paints and Solvent	
Pesticides, Herbicides, Fungicides	
Household Cleaners	
Lead Acid Batteries	
Other Batteries	
Other HHM	
Mercury Containing Products	Thermostats, thermometers, light switches, and other items containing mercury.
Sharps	Hypodermic needles.
Other Organic	Organic materials not classified as part of the other organic material categories.
Other Inorganic	Inorganic materials not classified as part of the other inorganic material categories.
Fines/Super Mix	
Other	Please specify.

Health and Safety Plan

HEALTH AND SAFETY PLAN

1.1 Objective of this Plan

The objective of this plan is to identify the critical health and safety issues related to the Iowa statewide waste characterization study and the method used to train staff concerning these issues.

The personal safety and health of each staff person is a primary consideration of the Project Team. The prevention of occupationally-induced injuries and illnesses will be given high priority during the performance of sorting activities. The Project Team will provide industry standard equipment, training, and physical facilities necessary for maintaining the personal safety and health of all staff members. Along with this commitment, it is the responsibility of each and every staff person to contribute to his or her own and fellow worker's health and safety by learning and exercising safe work practices and complying with all requirements of this site safety plan.

1.2 Applicability

This site safety plan outlines and explains the various equipment, procedures and rules which have been designed to keep sorters safe and healthy during this study. Unsafe practices or behavior will not be tolerated.

1.3 Standard Operating Procedures

This basic procedure for sorters will be to identify different materials in an MSW sample that has been placed on a waist-high sorting table and to place the materials in nearby appropriately labeled containers. Before receiving the waste on the table it will have been examined by the Site Supervisor (or an appropriately trained assistant) for household hazardous, hazardous, and infectious waste. This is considered the pre-sort and is very critical as related to site health and safety. After the material is sorted into the containers, the supervisor or an assistant will weigh the containers. After the containers are emptied, the next sample will be brought to the table and the sorting will begin again.

1.4 Location of Safety Equipment

The following items will be located near the sorting tables for immediate access:

- One 10# ABC Dry Chemical Fire Extinguisher
- Spill Containment Kit

- Protective Clothing
- First Aid Kit
- Portable Eyewash Unit
- Potable Water Supply

1.5 Employees and Personal Protective Equipment

1.5.1 Sorters and Work Zones

Based upon the amount of hazardous safety training and responsibility assumed for the study, various tasks have been assigned to staff.

1.5.2 Site Supervisor

The Site Supervisor is the site safety officer and the emergency coordinator. The Site Supervisor will be overseeing the entire work area and will be responsible for presorting the waste samples for hazards before the sample is categorized by the sorters. The sorters may not approach the areas where unexamined waste samples are being stored or examined. In the event of a spill of hazardous material from a sample, the supervisor is responsible for cleanup of the spill or for calling the appropriate authorities.

1.5.3 Assistant Supervisor

The Assistant Supervisor will assist the Site Supervisor as necessary. The focus of the Assistance Supervisor's role is to facilitate the sorting process for the sorting crew.

1.5.4 Sorters

Sorters are employees of the Project Team and will sort and categorize the waste being sampled. In order to make the job as comfortable and safe as possible, a number of procedures and work locations will be defined. If required by the facility operator and its health and safety requirements, sorters will wear an organic vapor dust mask. The waste will have been presorted by the Site Supervisor or Assistant Supervisor to remove the hazardous, household hazardous, and infectious waste, and the sorters will be limited to working only in the vicinity of the sort tables and taking breaks in a predetermined area.

1.5.5 Need for Personal Protective Clothing

Municipal solid waste is not considered to be a hazardous material for definition. Nevertheless, it certainly may contain items and substances that may be encountered in close range, picked up by hand, or may have leaked from a broken container and

mixed with other waste materials. These conditions could result in situations which could be hazardous to the health of the sorters conducting the study. For these reasons, it will be necessary for each sorter to wear the personal protective clothing that will be provided. This protective clothing is listed below.

- Hard hats and liners in the winter
- Safety glasses or goggles, or prescription safety glasses
- Organic vapor dust mask (if required by facility operator)
- White Tyvek full-piece suit (the suit's sleeves should be tucked inside the gloves so the ends of the sleeves don't drag in the waste)
- Nitrile gloves (cotton liners will be provided, optional)
- Steel-toed boots

1.5.6 Presorting Protection

Different levels of protection are required for different study activities, depending on the potential for exposure. In addition to the personal protective clothing listed previously for sorters, presorting the waste samples for hazardous, household hazardous, and infectious waste requires the wearing of a half-faced respirator fitted with organic vapor and acid gas cartridges and a dust filter pad. The Site Supervisor and Assistant Supervisor will be the only staff conducting the presorting and have received safety training associated with wearing the additional respiratory protection.

1.5.7 Spills

In the unlikely event of a spill or a release of a hazardous substance in a quantity still manageable by on-site personnel, the Site Supervisor will wear a poly-coated Tyvek suite (yellow) with duct tape to seal the wrists and ankles, double gloves (nitrile gloves with inner vinyl gloves), and disposable vinyl overboots to protect against liquids. The Site Supervisor will also switch to a full-faced respirator.

1.5.8 Likelihood of Heat and Cold Stress

Because the study will be taking place inside a minimally heated area or outside, environmental factors are an important consideration in worker health and safety. Additionally, the personal protective clothing required for the study can aggravate situations caused by uncomfortable weather. A large Tyvek suit will be worn over layers of clothing. Frequent breaks will be encouraged in the event of extremely hot or cold weather. A work/rest schedule will be adapted to weather conditions. Also, water coolers and beverages will be provided throughout the sort.

1.5.9 First Aid for Heat and Cold Stress

The following are First Aid procedures for conditions caused by hot and cold temperature extremes that may be aggravated by required personal protective equipment:

1.5.9.1 Heat Exhaustion

Caused by: Prolonged hot spell, excessive exposure, physical exertion.

Symptoms: Profuse sweating, weakness, dizziness, and sometimes heat cramps; skin is cold and pale, clammy with sweat; pulse is thready and blood pressure is low. Body temperature is normal or subnormal. Vomiting may occur. Unconsciousness is rare.

First Aid: Move to a cooler environment immediately. Provide rest and a cool drink of water or beverage like Gatorade. Seek medical attention if the symptoms are severe.

1.5.9.2 Heat Stroke (Heat Collapse)

Warning: Can Be Fatal

Caused by: Failure of the body to regulate its temperature because excessively warm weather and physical exertion has depleted it of fluids needed to perspire.

Symptoms:

1. Weakness, dizziness, nausea, headache, heat cramps, heat exhaustion, excessive sweating; skin flushed and pink.
2. Sweating stops (usually) and body temperature rises sharply. Delirium or coma is common; skin changes from pink to ashen or purplish.

First Aid: Immediate medical care is needed; heat stroke is very serious. The body must be cooled soon. Move the victim to a cooler place, remove protective clothing, and bathe in cold water. Use extreme care and frequently check ABCs (airway, breathing, and circulation) if the person is unconscious.

1.5.9.3 Frost Nip/Bite

Caused by: Cold air temperatures (especially if there is a wind) freezing the skin. Most often the exposed skin on the face, nose and ears is affected but prolonged cold may affect the hands and feet also.

Symptoms:

1. A reddening of the skin.
2. The area will blanch, or whiten, and there will be a stinging sensation. Frostbite should not be allowed to proceed beyond this stage. Seek a warm location immediately.
3. The area will become white, with a waxy appearance at this point, and will go numb. Tissue damage can occur at this point and, if ignored, gangrene may set in.

First Aid: Get indoors or to a warmer place immediately. Treat the frostbitten area with lukewarm water (103 to 107 degrees F); don't use hot water and absolutely do not rub the area with snow. If warm water isn't available, wrap the affected area in a warm, dry cloth. Drink a warm liquid. Do not smoke or drink because both act to constrict blood vessels and will inhibit circulation in the area. If the frostbitten area blisters do not break them; see a doctor soon to check for infection.

1.5.10 Routine Decontamination

"Decontamination" is a procedure for removing, or "doffing," the personal protective equipment in a specified order to prevent the spread of contaminants. During breaks and at lunch it is important that sorters remove the equipment so as not to inhale or consume contaminants on the gear.

1.6 Waste Handling Procedures

1.6.1 Presorting

Sorters hired to sort and categorize the waste samples will be wearing a level of protective clothing and respiratory equipment which will not allow them to work with an unexamined sample of solid waste. The Site Supervisor or another adequately-trained staff member will presort the waste sample, looking for hazardous, household hazardous, or infectious waste before it may be shoveled onto the sort table. If unsorted waste samples are brought into the sorting building, sorters will stay near the sort tables and not sort the waste until told that it is ready.

1.6.2 Sorting MSW

Sorting and categorizing waste requires that it be picked up with the hands. Nitrile gloves with optional cotton liners will be provided to protect the skin from dirt and potential hazards, but they will not protect against sharp materials, which will certainly be in the waste. To avoid being cut or receiving a puncture wound, items will be picked from the surface of the piled garbage.

Moving the waste to the containers used for categorizing and weighing the garbage will be done with care. Sorters will station themselves at a single position near a table and sort for the family of materials identified on the barrels nearest their location. Sorters will be trained to avoid grabbing handfuls of like materials and will not run around the table to the barrels behind other workers. One could easily trip, be knocked down, hit with an item, or at the very least startle a fellow worker by being behind them when unexpected. Materials in other categories will be passed to fellow workers nearer those barrels. Throwing or tossing the garbage will not be allowed.

Prior to initiating the sorting event, the Site Supervisor will provide each sorter with a list of the various material categories and their definitions. The Site Supervisor will review the materials to be sorted and address any questions about the various categories.

1.6.3 Lifting

It is likely that heavy barrels will need to be moved from the sort tables to the scale and then to a disposal area and that garbage will need to be shoveled onto the tables. Sorters are required to be able to lift 25 pounds to apply for the position. Every effort has been taken to lessen the likelihood of a back injury because of the nature of the work, but every individual will need to keep their own health in mind. If a sorter has a previous back injury or if a barrel is too heavy to roll or slide, a dolly will be used, or someone else will be asked to move it. When shoveling garbage onto the tabletop, sorters will be reminded not to load the shovel with more weight than they can comfortably lift.

The following tips will be used when lifting:

- Maintain the three natural curves of the spine by keeping the head high, chin tucked in, and back arched.

- Bend hips and knees.

- Use the diagonal lift (one foot ahead, one foot behind) to get the weight in close and maintain a wide, balanced base of support.

- Keep abdominal muscles tight when lifting to help support the back.

- Keep the load close to the body and stand up straight. Keep head up.

- Avoid twisting while lifting. Pivot after lifting, if changing direction.

- Avoid lifting anything heavy above the shoulders.

1.7 Procedure For Handling Hazardous Wastes

The waste composition study procedure has been designed so that sorters are not exposed to mixed municipal solid waste that has not first been screened for hazardous, household hazardous, or infectious waste. These materials are briefly defined and appropriate actions outlined for each in the following:

1.7.1 Hazardous:

Materials that were improperly disposed of in municipal waste; e.g., radioactive waste, toxic chemicals, explosives.

Action: If the presorters should miss a hazardous item in a waste sample and it is brought to the waste table and found, work should immediately stop and the area should be cleared. The entire waste sample will be rejected and removed and, depending upon the nature of the hazardous item, the site coordinator will see to the proper disposal action or will call the appropriate emergency agency.

1.7.2 Household Hazardous:

Materials commonly found in the home or work place which can be toxic, especially when discarded; e.g., paints, solvents, strong cleaners, pesticides.

Action: If a sorter becomes aware that something is spilled in the waste and hazardous--e.g., they smell a solvent or chemical odor—they will be advised to stop working, step away, notify the others at the table to stop work, and call the supervisor. If an unidentified chemical has apparently spilled on the mixed waste, the sample will be rejected, the table cleaned, and a new sample brought in. Sorters will set aside items considered household hazardous waste (HHW) per the material category definitions. The Site Supervisor will be responsible for working with the facility staff to designate a location to place the HHW upon sorting the material for each sample.

1.7.3 Infectious Waste:

Solid waste that might be able to transfer disease or infection to another person; e.g., extremely bloody medical items, syringes, or an indiscriminately discarded biomedical bag. These biomedical bags are often red in color and they have "infectious waste" or the biomedical symbol printed on them.

Action: If a hospital or veterinary bag or a similar medical waste is found, work will be stopped and the coordinator notified to remove the waste from the table. Single syringes are quite common in mixed municipal waste and one of the major reasons hands should not be plunged blindly into garbage. If a syringe is found, the sorter finding it should announce to other workers at the table "Syringe." The sorter will then move the syringe to the appropriate container in order not to accidentally poke themselves, another worker, or someone who may be coming up from behind.

1.8 Emergency Contingency Plan

The Site Supervisor will be the emergency coordinator. The Assistant Supervisor will be the emergency coordinator in the event that the supervisor is not available. The Site Supervisor is responsible for understanding and complying with the facilities' emergency contingency plan and will follow site procedures at each facility. Prior to initiating each sorting event, the Site Supervisor will discuss the health and safety issues with a representative of each participating facility.

1.8.1 Emergency Eyewash Unit

An emergency eyewash unit or portable eyewash bottles will be located near the sort area. In the event that someone gets a foreign object in his or her eye, the victim's eyes should be flushed with water from the eyewash unit.

1.9 Summary

The Site Supervisor will follow the health, safety, and training procedures specified in this plan. All sorters will be familiar with the policy and procedures specified in the plan prior to initiating the sorting events.

Appendix B
DETAILED RESULTS

Appendix B

DETAILED RESULTS

The detailed results that follow include MSW composition, and MSW composition by generator type (i.e., residential, ICI, and mixed), and solid waste composition. The solid waste composition represents an estimate of all materials landfilled including dedicated construction and demolition materials and special wastes (e.g., sludges, asbestos fluff, and other materials requiring a special waste authorization for disposal). The MSW composition excludes industrial processed wastes, special wastes, and deducted C&D. Only C&D that is commingled with MSW is included as part of the MSW composition.

Iowa Statewide Results



Iowa Statewide - Residential MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	7.9%	6.4%	9.7%
Paper	High Grade Office	1.5%	1.2%	2.0%
Paper	Magazines	2.4%	1.9%	3.0%
Paper	Mixed Recyclable Paper	7.9%	6.7%	9.2%
Paper	Newsprint	5.7%	4.3%	7.3%
Paper	Non-Recyclable Paper	1.9%	1.5%	2.3%
Paper	OCC and Kraft Bags	3.8%	2.8%	4.9%
Total Paper		31.1%	27.5%	34.8%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.3%
Plastics	# 1 PET Beverage Containers	0.5%	0.4%	0.6%
Plastics	# 2 HDPE Containers	1.3%	1.0%	1.6%
Plastics	Film/Wrap/Bags	5.3%	4.3%	6.5%
Plastics	Other # 1 PET Containers	0.4%	0.3%	0.6%
Plastics	Other Plastic Containers	0.5%	0.4%	0.6%
Plastics	Other Plastic Products	5.0%	4.0%	6.2%
Total Plastics		13.2%	10.9%	15.8%
Metals	Aluminum Beverage Containers	0.0%	0.0%	0.1%
Metals	Aluminum Deposit Beverage Containers	0.2%	0.1%	0.3%
Metals	Ferrous Food and Beverage Containers	1.2%	1.0%	1.5%
Metals	Other Aluminum Containers	0.1%	0.1%	0.1%
Metals	Other Ferrous Metals	2.0%	1.4%	2.7%
Metals	Other Non-Ferrous Scrap	0.7%	0.5%	0.9%
Total Metals		4.2%	3.3%	5.3%
Glass	Blue Glass	0.1%	0.0%	0.2%
Glass	Brown Glass	0.1%	0.0%	0.1%
Glass	Clear Glass	1.0%	0.8%	1.3%
Glass	Glass Deposit Containers	0.3%	0.2%	0.4%
Glass	Green Glass	0.1%	0.1%	0.2%
Glass	Other Mixed Cullet	0.9%	0.5%	1.4%
Total Glass		2.4%	1.9%	3.1%
Yard Waste	Pumpkins	0.1%	0.1%	0.2%
Yard Waste	Yard Waste	1.6%	0.9%	2.5%
Total Yard Waste		1.7%	1.0%	2.6%
Food Waste	Food Waste	11.2%	9.2%	13.6%
Total Food Waste		11.2%	9.2%	13.6%
Wood	Non-Treated	2.2%	1.1%	3.8%
Wood	Treated	4.9%	2.9%	7.8%
Total Wood		7.2%	4.4%	10.8%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	5.4%	2.5%	10.0%
Total Demolition / Renovation / Construction Debris		5.4%	2.5%	10.0%

Iowa Statewide - Residential MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cell phones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.1%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	2.0%	1.1%	3.4%
Durables	Other Durables	1.6%	1.0%	2.7%
Total Durables		3.7%	2.5%	5.4%
Textiles And Leathers	Textiles and Leathers	5.4%	4.0%	7.1%
Total Textiles And Leathers		5.4%	4.0%	7.1%
Diapers	Diapers	4.1%	3.1%	5.4%
Total Diapers		4.1%	3.1%	5.4%
Rubber	Rubber	0.1%	0.1%	0.1%
Total Rubber		0.1%	0.1%	0.1%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.3%	0.2%	0.5%
HHMS	Other HHM	0.0%	0.0%	0.0%
HHMS	Paints and Solvent	0.2%	0.1%	0.4%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.6%	0.4%	0.9%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	2.2%	1.6%	3.0%
Total Other Organic		2.2%	1.6%	3.0%
Other Inorganic	Other Inorganic	3.9%	2.8%	5.4%
Total Other Inorganic		3.9%	2.8%	5.4%
Fines/Super Mix	Fines/Super Mix	3.6%	2.8%	4.6%
Total Fines/Super Mix		3.6%	2.8%	4.6%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Iowa Statewide - ICI MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	5.4%	4.3%	6.8%
Paper	High Grade Office	3.4%	2.4%	4.6%
Paper	Magazines	1.1%	0.8%	1.5%
Paper	Mixed Recyclable Paper	6.0%	5.0%	7.2%
Paper	Newsprint	2.3%	1.7%	3.2%
Paper	Non-Recyclable Paper	3.4%	2.7%	4.5%
Paper	OCC and Kraft Bags	12.4%	9.8%	15.3%
Total Paper		34.1%	29.6%	38.8%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.1%	0.3%
Plastics	# 1 PET Beverage Containers	0.4%	0.3%	0.5%
Plastics	# 2 HDPE Containers	0.8%	0.6%	1.0%
Plastics	Film/Wrap/Bags	7.6%	6.0%	9.4%
Plastics	Other # 1 PET Containers	0.1%	0.1%	0.2%
Plastics	Other Plastic Containers	0.2%	0.2%	0.3%
Plastics	Other Plastic Products	6.8%	5.5%	8.4%
Total Plastics		16.2%	13.5%	19.1%
Metals	Aluminum Beverage Containers	0.1%	0.1%	0.2%
Metals	Aluminum Deposit Beverage Containers	0.1%	0.1%	0.2%
Metals	Ferrous Food and Beverage Containers	0.8%	0.5%	1.2%
Metals	Other Aluminum Containers	0.1%	0.0%	0.1%
Metals	Other Ferrous Metals	3.4%	2.4%	4.6%
Metals	Other Non-Ferrous Scrap	0.4%	0.3%	0.5%
Total Metals		4.9%	3.8%	6.2%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.0%	0.0%	0.0%
Glass	Clear Glass	0.4%	0.3%	0.6%
Glass	Glass Deposit Containers	0.2%	0.1%	0.3%
Glass	Green Glass	0.1%	0.0%	0.1%
Glass	Other Mixed Cullet	0.3%	0.2%	0.5%
Total Glass		1.0%	0.8%	1.4%
Yard Waste	Pumpkins	0.4%	0.2%	0.8%
Yard Waste	Yard Waste	0.7%	0.4%	1.1%
Total Yard Waste		1.1%	0.8%	1.7%
Food Waste	Food Waste	10.3%	8.1%	13.1%
Total Food Waste		10.3%	8.1%	13.1%
Wood	Non-Treated	4.7%	3.4%	6.3%
Wood	Treated	4.6%	3.2%	6.6%
Total Wood		9.3%	7.0%	12.2%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	5.6%	3.7%	8.2%
Total Demolition / Renovation / Construction Debris		5.6%	3.7%	8.2%

Iowa Statewide - ICI MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.1%	0.0%	0.1%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	2.4%	1.4%	3.6%
Durables	Other Durables	4.0%	2.5%	6.1%
Total Durables		6.4%	4.2%	9.3%
Textiles And Leathers	Textiles and Leathers	4.8%	3.2%	6.8%
Total Textiles And Leathers		4.8%	3.2%	6.8%
Diapers	Diapers	0.9%	0.6%	1.2%
Total Diapers		0.9%	0.6%	1.2%
Rubber	Rubber	0.7%	0.5%	1.0%
Total Rubber		0.7%	0.5%	1.0%
HHMS	Automotive Products	0.0%	0.0%	0.1%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.1%	0.1%	0.1%
HHMS	Other HHM	0.1%	0.0%	0.1%
HHMS	Paints and Solvent	0.0%	0.0%	0.1%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.3%	0.2%	0.4%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	0.9%	0.6%	1.3%
Total Other Organic		0.9%	0.6%	1.3%
Other Inorganic	Other Inorganic	1.3%	0.9%	2.0%
Total Other Inorganic		1.3%	0.9%	2.0%
Fines/Super Mix	Fines/Super Mix	1.4%	1.2%	1.8%
Total Fines/Super Mix		1.4%	1.2%	1.8%
Other	Other	0.8%	0.4%	1.3%
Total Other		0.8%	0.4%	1.3%
Grand Total		100.0%		

Iowa Statewide - Mixed MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	6.9%	6.4%	7.6%
Paper	High Grade Office	1.6%	1.3%	2.1%
Paper	Magazines	2.6%	2.2%	3.2%
Paper	Mixed Recyclable Paper	8.0%	7.2%	8.9%
Paper	Newsprint	5.6%	4.9%	6.6%
Paper	Non-Recyclable Paper	2.5%	1.9%	3.5%
Paper	OCC and Kraft Bags	6.6%	4.7%	9.4%
Total Paper		33.9%	30.8%	37.2%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.3%
Plastics	# 1 PET Beverage Containers	0.5%	0.4%	0.7%
Plastics	# 2 HDPE Containers	1.1%	1.0%	1.3%
Plastics	Film/Wrap/Bags	6.1%	5.5%	6.7%
Plastics	Other # 1 PET Containers	0.3%	0.3%	0.4%
Plastics	Other Plastic Containers	0.7%	0.5%	1.1%
Plastics	Other Plastic Products	5.5%	4.6%	6.9%
Total Plastics		14.5%	13.2%	15.9%
Metals	Aluminum Beverage Containers	0.3%	0.1%	0.9%
Metals	Aluminum Deposit Beverage Containers	0.2%	0.1%	0.3%
Metals	Ferrous Food and Beverage Containers	1.0%	0.8%	1.2%
Metals	Other Aluminum Containers	0.3%	0.1%	0.6%
Metals	Other Ferrous Metals	3.0%	2.2%	4.4%
Metals	Other Non-Ferrous Scrap	0.5%	0.4%	0.7%
Total Metals		5.3%	4.3%	6.6%
Glass	Blue Glass	0.0%	0.0%	0.1%
Glass	Brown Glass	0.1%	0.0%	0.1%
Glass	Clear Glass	1.0%	0.7%	1.5%
Glass	Glass Deposit Containers	0.5%	0.3%	1.0%
Glass	Green Glass	0.2%	0.1%	0.5%
Glass	Other Mixed Cullet	0.6%	0.4%	0.9%
Total Glass		2.3%	1.9%	3.0%
Yard Waste	Pumpkins	0.1%	0.0%	0.2%
Yard Waste	Yard Waste	2.8%	1.7%	5.0%
Total Yard Waste		2.9%	1.8%	5.1%
Food Waste	Food Waste	10.1%	8.7%	12.0%
Total Food Waste		10.1%	8.7%	12.0%
Wood	Non-Treated	1.9%	1.3%	3.0%
Wood	Treated	3.9%	2.3%	6.8%
Total Wood		5.8%	3.9%	8.7%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	5.4%	3.5%	8.8%
Total Demolition / Renovation / Construction Debris		5.4%	3.5%	8.8%

Iowa Statewide - Mixed MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.9%	0.5%	1.8%
Durables	Computer Monitors/TV'S	0.3%	0.1%	0.9%
Durables	Electrical and Household Appliances	1.9%	1.2%	2.9%
Durables	Other Durables	0.9%	0.6%	1.5%
Total Durables		3.9%	2.9%	5.5%
Textiles And Leathers	Textiles and Leathers	4.3%	3.4%	5.6%
Total Textiles And Leathers		4.3%	3.4%	5.6%
Diapers	Diapers	3.3%	2.8%	4.0%
Total Diapers		3.3%	2.8%	4.0%
Rubber	Rubber	0.4%	0.2%	0.6%
Total Rubber		0.4%	0.2%	0.6%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.1%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.2%	0.2%	0.4%
HHMS	Other HHM	0.2%	0.1%	0.4%
HHMS	Paints and Solvent	0.1%	0.1%	0.2%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.6%	0.4%	0.8%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	1.8%	1.4%	2.3%
Total Other Organic		1.8%	1.4%	2.3%
Other Inorganic	Other Inorganic	2.4%	1.9%	3.4%
Total Other Inorganic		2.4%	1.9%	3.4%
Fines/Super Mix	Fines/Super Mix	2.7%	2.4%	3.1%
Total Fines/Super Mix		2.7%	2.4%	3.1%
Other	Other	0.4%	0.1%	1.0%
Total Other		0.4%	0.1%	1.0%
Grand Total		100.0%		

Iowa Statewide - MSW Composition (Weighted Results)

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	6.5%	5.7%	7.4%
Paper	High Grade Office	2.5%	1.9%	3.1%
Paper	Magazines	1.8%	1.6%	2.1%
Paper	Mixed Recyclable Paper	7.0%	6.3%	7.7%
Paper	Newsprint	4.0%	3.4%	4.7%
Paper	Non-Recyclable Paper	2.8%	2.3%	3.3%
Paper	OCC and Kraft Bags	8.5%	7.2%	10.1%
Total Paper		33.0%	30.5%	35.7%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.2%
Plastics	# 1 PET Beverage Containers	0.4%	0.4%	0.5%
Plastics	# 2 HDPE Containers	1.0%	0.9%	1.2%
Plastics	Film/Wrap/Bags	6.6%	5.7%	7.5%
Plastics	Other # 1 PET Containers	0.3%	0.2%	0.3%
Plastics	Other Plastic Containers	0.4%	0.3%	0.5%
Plastics	Other Plastic Products	6.0%	5.3%	6.9%
Total Plastics		14.9%	13.4%	16.6%
Metals	Aluminum Beverage Containers	0.1%	0.1%	0.2%
Metals	Aluminum Deposit Beverage Containers	0.2%	0.1%	0.2%
Metals	Ferrous Food and Beverage Containers	1.0%	0.8%	1.2%
Metals	Other Aluminum Containers	0.1%	0.1%	0.2%
Metals	Other Ferrous Metals	2.8%	2.3%	3.5%
Metals	Other Non-Ferrous Scrap	0.5%	0.4%	0.6%
Total Metals		4.7%	4.1%	5.5%
Glass	Blue Glass	0.0%	0.0%	0.1%
Glass	Brown Glass	0.0%	0.0%	0.1%
Glass	Clear Glass	0.7%	0.6%	0.9%
Glass	Glass Deposit Containers	0.3%	0.2%	0.4%
Glass	Green Glass	0.1%	0.1%	0.2%
Glass	Other Mixed Cullet	0.5%	0.4%	0.7%
Total Glass		1.7%	1.5%	2.0%
Yard Waste	Pumpkins	0.3%	0.2%	0.4%
Yard Waste	Yard Waste	1.4%	1.0%	1.9%
Total Yard Waste		1.6%	1.3%	2.2%
Food Waste	Food Waste	10.6%	9.3%	12.2%
Total Food Waste		10.6%	9.3%	12.2%
Wood	Non-Treated	3.4%	2.7%	4.4%
Wood	Treated	4.6%	3.6%	6.0%
Total Wood		8.0%	6.5%	9.9%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	5.5%	4.1%	7.6%
Total Demolition / Renovation / Construction Debris		5.5%	4.1%	7.6%

Iowa Statewide - MSW Composition (Weighted Results)

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.2%	0.1%	0.3%
Durables	Computer Monitors/TV'S	0.1%	0.0%	0.1%
Durables	Electrical and Household Appliances	2.1%	1.6%	2.9%
Durables	Other Durables	2.7%	1.9%	3.8%
Total Durables		5.1%	3.9%	6.6%
Textiles And Leathers	Textiles and Leathers	4.9%	4.0%	6.1%
Total Textiles And Leathers		4.9%	4.0%	6.1%
Diapers	Diapers	2.4%	2.0%	2.8%
Total Diapers		2.4%	2.0%	2.8%
Rubber	Rubber	0.5%	0.3%	0.6%
Total Rubber		0.5%	0.3%	0.6%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.2%	0.2%	0.3%
HHMS	Other HHM	0.1%	0.1%	0.1%
HHMS	Paints and Solvent	0.1%	0.1%	0.2%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.4%	0.4%	0.6%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	1.5%	1.2%	1.8%
Total Other Organic		1.5%	1.2%	1.8%
Other Inorganic	Other Inorganic	2.4%	1.9%	3.0%
Total Other Inorganic		2.4%	1.9%	3.0%
Fines/Super Mix	Fines/Super Mix	2.4%	2.1%	2.8%
Total Fines/Super Mix		2.4%	2.1%	2.8%
Other	Other	0.5%	0.3%	0.8%
Total Other		0.5%	0.3%	0.8%
Grand Total		100.0%		

Facility Specific Results – MSW Composition

Material	Boone County			Des Moines County			Cedar Rapids/Linn County			Dubuque Area			Metro Waste Authority			NW Iowa		
	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound
Compostable Paper	5.8%	4.5%	7.2%	6.7%	5.5%	8.1%	7.1%	5.3%	9.1%	5.6%	4.4%	7.0%	6.4%	5.2%	7.9%	6.9%	6.0%	8.0%
High Grade Office Magazines	1.4%	1.0%	2.0%	2.3%	1.6%	3.4%	1.6%	1.2%	2.1%	1.5%	1.1%	1.9%	2.9%	2.0%	4.1%	3.5%	2.5%	4.7%
Mixed Recyclable Paper	2.7%	1.9%	3.6%	1.5%	1.1%	2.0%	1.0%	0.7%	1.4%	1.7%	1.2%	2.3%	1.9%	1.5%	2.4%	3.8%	3.1%	4.5%
Newsprint	9.2%	6.8%	12.1%	11.1%	7.8%	15.1%	5.3%	4.2%	6.6%	5.8%	4.8%	7.0%	7.0%	6.0%	8.2%	9.4%	8.2%	10.6%
Non-Recyclable Paper	5.6%	4.2%	7.3%	2.5%	1.7%	3.7%	2.4%	1.7%	3.2%	4.4%	2.4%	6.9%	4.6%	3.7%	5.7%	4.1%	3.3%	5.0%
OCC and Kraft Bags	4.2%	2.4%	6.5%	2.0%	1.6%	2.6%	4.3%	3.0%	5.9%	3.9%	2.6%	5.5%	1.8%	1.4%	2.4%	3.8%	2.6%	5.1%
Total Paper	7.0%	4.8%	9.5%	10.0%	7.9%	12.6%	3.5%	2.4%	4.8%	9.6%	6.4%	13.3%	10.4%	8.0%	13.1%	5.8%	4.5%	7.3%
Total Paper	36.0%	29.3%	43.0%	36.2%	32.0%	40.6%	25.2%	21.0%	29.6%	32.5%	27.3%	38.0%	35.1%	30.7%	39.7%	37.3%	33.4%	41.2%
# 1 PET Deposit Beverage Containers	0.1%	0.1%	0.2%	0.2%	0.1%	0.3%	0.3%	0.2%	0.4%	0.2%	0.1%	0.3%	0.2%	0.1%	0.2%	0.2%	0.2%	0.3%
# 1 PET Beverage Containers	0.5%	0.4%	0.7%	0.5%	0.4%	0.7%	0.5%	0.3%	0.6%	0.3%	0.2%	0.4%	0.4%	0.3%	0.5%	0.6%	0.5%	0.7%
# 2 HDPE Containers	1.1%	0.8%	1.4%	1.1%	0.8%	1.4%	0.9%	0.7%	1.2%	0.9%	0.6%	1.1%	1.0%	0.8%	1.3%	1.6%	1.3%	2.0%
Film/Wrap/Bags	4.2%	3.4%	5.1%	8.5%	6.6%	10.7%	6.3%	4.8%	8.0%	5.6%	4.6%	6.8%	6.8%	5.4%	8.5%	6.1%	5.1%	7.2%
Other # 1 PET Containers	0.3%	0.3%	0.5%	0.2%	0.1%	0.3%	0.2%	0.2%	0.3%	0.2%	0.2%	0.3%	0.3%	0.2%	0.4%	0.4%	0.3%	0.5%
Other Plastic Containers	0.5%	0.4%	0.7%	0.4%	0.3%	0.6%	0.4%	0.3%	0.6%	0.3%	0.3%	0.5%	0.4%	0.3%	0.5%	0.5%	0.4%	0.6%
Other Plastic Products	4.5%	3.5%	5.5%	7.4%	5.2%	10.3%	6.5%	4.9%	8.2%	6.5%	5.3%	7.8%	5.9%	4.6%	7.4%	4.1%	3.6%	4.5%
Total Plastics	11.3%	9.4%	13.3%	18.4%	14.5%	22.8%	15.0%	12.3%	18.0%	14.1%	12.2%	16.1%	14.9%	12.4%	17.8%	13.5%	12.0%	15.0%
Aluminum Beverage Containers	0.2%	0.1%	0.3%	0.1%	0.1%	0.2%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.4%	0.1%	0.1%	0.2%
Aluminum Deposit Beverage Containers	0.1%	0.1%	0.1%	0.2%	0.1%	0.3%	0.1%	0.1%	0.2%	0.1%	0.1%	0.2%	0.2%	0.1%	0.2%	0.3%	0.2%	0.4%
Ferrous Food and Beverage Containers	1.1%	0.8%	1.4%	1.2%	0.8%	1.6%	1.7%	1.1%	2.5%	0.8%	0.5%	1.0%	0.7%	0.5%	0.9%	1.5%	1.2%	1.8%
Other Aluminum Containers	0.2%	0.1%	0.3%	0.1%	0.1%	0.2%	0.1%	0.0%	0.1%	0.2%	0.1%	0.3%	0.1%	0.0%	0.2%	0.2%	0.1%	0.3%
Other Ferrous Metals	3.4%	2.1%	5.0%	1.3%	0.9%	2.0%	3.5%	2.3%	5.1%	2.6%	1.8%	3.5%	2.9%	2.0%	4.0%	1.5%	1.1%	1.8%
Other Non-Ferrous Scrap	0.4%	0.2%	0.6%	0.5%	0.3%	0.8%	0.5%	0.3%	0.6%	0.3%	0.2%	0.4%	0.5%	0.4%	0.7%	0.6%	0.5%	0.9%
Total Metals	5.3%	3.8%	7.1%	3.4%	2.7%	4.4%	6.0%	4.4%	7.8%	4.1%	3.2%	5.1%	4.5%	3.5%	5.7%	4.3%	3.6%	4.9%
Blue Glass	0.0%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Brown Glass	0.1%	0.0%	0.1%	0.1%	0.0%	0.2%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.2%
Clear Glass	1.1%	0.8%	1.4%	0.8%	0.6%	1.1%	0.8%	0.5%	1.1%	1.0%	0.6%	1.4%	0.6%	0.4%	0.8%	0.9%	0.7%	1.2%
Glass Deposit Containers	0.2%	0.1%	0.3%	0.3%	0.2%	0.5%	0.3%	0.2%	0.4%	0.3%	0.2%	0.5%	0.3%	0.2%	0.4%	0.4%	0.2%	0.6%
Green Glass	0.1%	0.0%	0.1%	0.2%	0.1%	0.5%	0.1%	0.1%	0.2%	0.1%	0.0%	0.2%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%
Other Mixed Cullet	0.4%	0.2%	0.5%	0.2%	0.1%	0.3%	1.0%	0.6%	1.6%	0.6%	0.3%	0.9%	0.4%	0.3%	0.6%	0.7%	0.5%	1.0%
Total Glass	1.8%	1.3%	2.3%	1.7%	1.2%	2.4%	2.3%	1.5%	3.3%	2.0%	1.3%	2.8%	1.4%	1.1%	1.8%	2.1%	1.6%	2.7%

Facility Specific Results – MSW Composition

Material	Boone County			Des Moines County			Cedar Rapids/Linn County			Dubuque Area			Metro Waste Authority			NW Iowa		
	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound	Mean	Lower Bound	Upper Bound
Pumpkins	0.1%	0.1%	0.2%	1.6%	0.7%	2.9%	0.7%	0.3%	1.3%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%	0.3%	0.1%	0.5%
Yard Waste	0.7%	0.4%	1.0%	1.0%	0.6%	1.7%	0.9%	0.5%	1.4%	1.0%	0.6%	1.6%	1.7%	1.1%	2.5%	1.5%	1.0%	2.2%
Total Yard Waste	0.8%	0.5%	1.2%	2.6%	1.4%	4.3%	1.6%	0.8%	2.6%	1.2%	0.7%	1.8%	1.7%	1.1%	2.5%	1.8%	1.2%	2.6%
Food Waste	9.8%	7.1%	12.9%	14.6%	10.6%	19.6%	12.4%	9.1%	16.2%	12.1%	8.8%	15.9%	9.2%	7.2%	11.7%	10.9%	8.9%	13.1%
Non-Treated	0.9%	0.5%	1.3%	3.2%	1.5%	5.7%	4.2%	2.6%	6.2%	3.4%	2.0%	5.1%	3.5%	2.3%	5.0%	1.5%	0.9%	2.2%
Treated	1.6%	1.0%	2.3%	3.0%	1.4%	5.3%	6.1%	3.5%	9.4%	4.7%	2.9%	6.9%	4.6%	3.0%	6.8%	2.1%	1.4%	3.0%
Total Wood	2.4%	1.6%	3.4%	6.2%	3.4%	9.8%	10.3%	6.2%	15.3%	8.1%	5.3%	11.3%	8.1%	5.8%	11.0%	3.6%	2.5%	4.9%
Demolition/ Renovation/ Construction Debris	10.2%	6.0%	15.5%	1.7%	0.9%	3.1%	8.9%	5.0%	13.6%	3.5%	2.1%	5.2%	4.9%	2.8%	8.1%	4.5%	2.6%	6.8%
Cell phones and Chargers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Central Processing Units/Peripherals	0.0%	0.0%	0.0%	1.2%	0.2%	3.4%	0.2%	0.1%	0.3%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%	1.3%	0.6%	2.3%
Computer Monitors/TV'S	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.4%
Electrical and Household Appliances	1.4%	0.8%	2.0%	1.7%	0.8%	3.1%	1.1%	0.6%	1.7%	2.4%	1.5%	3.4%	2.7%	1.7%	4.1%	1.5%	0.9%	2.1%
Other Durables	4.1%	2.0%	6.9%	1.9%	1.0%	3.3%	2.8%	1.5%	4.6%	3.5%	2.0%	5.6%	2.6%	1.3%	4.5%	1.2%	0.6%	2.0%
Total Durables	5.5%	3.1%	8.5%	4.7%	2.7%	8.1%	4.3%	2.5%	6.4%	6.0%	3.9%	8.6%	5.3%	3.2%	7.9%	4.3%	2.7%	6.2%
Textiles and Leathers	2.5%	1.7%	3.3%	2.7%	1.9%	3.7%	3.3%	2.2%	4.6%	5.8%	4.1%	7.6%	5.7%	4.1%	7.7%	5.0%	3.8%	6.2%
Diapers	3.0%	2.0%	4.1%	1.8%	1.2%	2.7%	2.5%	1.6%	3.6%	2.3%	1.5%	3.3%	2.2%	1.6%	2.9%	3.9%	3.0%	4.9%
Rubber	0.3%	0.2%	0.4%	0.6%	0.3%	0.9%	0.2%	0.1%	0.3%	1.1%	0.7%	1.7%	0.4%	0.2%	0.7%	0.4%	0.3%	0.6%
Automotive Products	0.1%	0.0%	0.2%	0.2%	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%
Household Cleaners	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lead Acid Batteries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mercury Containing Products	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Batteries	0.1%	0.0%	0.1%	0.2%	0.1%	0.3%	0.3%	0.2%	0.5%	0.3%	0.2%	0.5%	0.1%	0.1%	0.2%	0.5%	0.3%	0.7%
Other HHM	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%	0.2%	0.1%	0.3%	0.4%	0.2%	0.7%	0.0%	0.0%	0.1%	0.2%	0.1%	0.3%
Paints and Solvent	0.4%	0.2%	0.7%	0.3%	0.1%	0.5%	0.0%	0.0%	0.0%	0.6%	0.3%	0.9%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%
Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total HHMS	0.6%	0.3%	0.9%	0.7%	0.5%	1.1%	0.5%	0.3%	0.8%	1.0%	0.6%	1.5%	0.2%	0.1%	0.3%	0.8%	0.6%	1.1%
Sharps	0.0%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Organic	1.3%	0.9%	1.9%	0.9%	0.6%	1.1%	1.2%	0.8%	1.7%	1.5%	1.0%	2.0%	1.6%	1.2%	2.2%	1.7%	1.2%	2.2%
Other Inorganic	5.0%	2.9%	7.7%	1.6%	1.1%	2.3%	2.8%	1.6%	4.2%	2.6%	1.6%	3.8%	2.1%	1.4%	3.0%	2.5%	1.6%	3.6%
Fines/Super Mix	2.1%	1.6%	2.7%	2.2%	1.7%	2.7%	2.1%	1.5%	2.8%	2.1%	1.6%	2.8%	2.6%	2.0%	3.2%	2.8%	2.3%	3.2%
Other	2.2%	0.7%	4.4%	0.0%	0.0%	0.0%	1.4%	0.6%	2.3%	0.0%	0.0%	0.0%	0.1%	0.1%	0.3%	0.7%	0.3%	1.2%
Grand Total	100.0%			100.0%			100.0%			100.0%			100.0%			100.0%		

Boone County Landfill

Boone County Landfill - Solid Waste Composition

Material Group	Material	Average Percent Composition
Paper	Compostable Paper	3.0%
Paper	High Grade Office	0.8%
Paper	Magazines	1.4%
Paper	Mixed Recyclable Paper	4.8%
Paper	Newsprint	2.9%
Paper	Non-Recyclable Paper	2.2%
Paper	OCC and Kraft Bags	3.6%
Total Paper		18.7%
Plastics	# 1 PET Deposit Beverage Containers	0.1%
Plastics	# 1 PET Beverage Containers	0.3%
Plastics	# 2 HDPE Containers	0.6%
Plastics	Film/Wrap/Bags	2.2%
Plastics	Other # 1 PET Containers	0.2%
Plastics	Other Plastic Containers	0.3%
Plastics	Other Plastic Products	2.3%
Total Plastics		5.9%
Metals	Aluminum Beverage Containers	0.1%
Metals	Aluminum Deposit Beverage Containers	0.0%
Metals	Ferrous Food and Beverage Containers	0.6%
Metals	Other Aluminum Containers	0.1%
Metals	Other Ferrous Metals	1.8%
Metals	Other Non-Ferrous Scrap	0.2%
Total Metals		2.8%
Glass	Blue Glass	0.0%
Glass	Brown Glass	0.0%
Glass	Clear Glass	0.6%
Glass	Glass Deposit Containers	0.1%
Glass	Green Glass	0.0%
Glass	Other Mixed Cullet	0.2%
Total Glass		0.9%
Yard Waste	Pumpkins	0.1%
Yard Waste	Yard Waste	0.3%
Total Yard Waste		0.4%
Food Waste	Food Waste	5.1%
Total Food Waste		5.1%
Wood	Non-Treated	0.4%
Wood	Treated	0.8%
Total Wood		1.3%
Demolition / Renovation / Construction Debris	C & D Debris	17.9%
Total Demolition / Renovation / Construction Debris		17.9%

Boone County Landfill - Solid Waste Composition

Material Group	Material	Average Percent Composition
Durables	Cellphones and Chargers	0.0%
Durables	Central Processing Units/Peripherals	0.0%
Durables	Computer Monitors/TV'S	0.0%
Durables	Electrical and Household Appliances	0.7%
Durables	Other Durables	2.1%
Total Durables		2.8%
Textiles And Leathers	Textiles and Leathers	1.3%
Total Textiles And Leathers		1.3%
Diapers	Diapers	1.5%
Total Diapers		1.5%
Rubber	Rubber	0.1%
Total Rubber		0.1%
HHMS	Automotive Products	0.0%
HHMS	Household Cleaners	0.0%
HHMS	Lead Acid Batteries	0.0%
HHMS	Mercury Containing Products	0.0%
HHMS	Other Batteries	0.0%
HHMS	Other HHM	0.0%
HHMS	Paints and Solvent	0.2%
HHMS	Pesticides, Herbicides, Fungicides	0.0%
Total Household Hazardous Materials		0.3%
Sharps	Sharps	0.0%
Total Sharps		0.0%
Other Organic	Other Organic	0.7%
Total Other Organic		0.7%
Other Inorganic	Other Inorganic	2.6%
Total Other Inorganic		2.6%
Fines/Super Mix	Fines/Super Mix	1.1%
Total Fines/Super Mix		1.1%
Other	Other	0.0%
Total Other		0.0%
Other	Asbestos, ash, contaminated soil	36.5%
Special Waste		36.5%
Grand Total		100%

Boone County Landfill - Residential Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	6.2%	4.0%	9.0%
Paper	High Grade Office	1.0%	0.5%	1.7%
Paper	Magazines	3.0%	1.7%	4.8%
Paper	Mixed Recyclable Paper	12.5%	6.7%	19.9%
Paper	Newsprint	6.0%	4.2%	8.1%
Paper	Non-Recyclable Paper	1.8%	1.3%	2.3%
Paper	OCC and Kraft Bags	5.4%	2.8%	8.8%
Total Paper		36.0%	27.1%	45.3%
Plastics	# 1 PET Deposit Beverage Containers	0.1%	0.0%	0.2%
Plastics	# 1 PET Beverage Containers	0.6%	0.4%	0.8%
Plastics	# 2 HDPE Containers	1.2%	0.8%	1.7%
Plastics	Film/Wrap/Bags	4.4%	3.0%	6.1%
Plastics	Other # 1 PET Containers	0.5%	0.3%	0.7%
Plastics	Other Plastic Containers	1.1%	0.5%	1.9%
Plastics	Other Plastic Products	4.1%	2.5%	6.1%
Total Plastics		11.9%	9.7%	14.3%
Metals	Aluminum Beverage Containers	0.2%	0.1%	0.5%
Metals	Aluminum Deposit Beverage Containers	0.1%	0.0%	0.1%
Metals	Ferrous Food and Beverage Containers	1.2%	1.0%	1.6%
Metals	Other Aluminum Containers	0.2%	0.0%	0.4%
Metals	Other Ferrous Metals	5.4%	2.3%	9.8%
Metals	Other Non-Ferrous Scrap	0.2%	0.1%	0.4%
Total Metals		7.4%	4.4%	11.1%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.0%	0.0%	0.1%
Glass	Clear Glass	1.5%	1.0%	2.0%
Glass	Glass Deposit Containers	0.5%	0.1%	1.3%
Glass	Green Glass	0.1%	0.0%	0.2%
Glass	Other Mixed Cullet	0.8%	0.3%	1.5%
Total Glass		2.9%	2.0%	3.9%
Yard Waste	Pumpkins	0.5%	0.1%	1.3%
Yard Waste	Yard Waste	0.7%	0.2%	1.5%
Total Yard Waste		1.2%	0.3%	2.5%
Food Waste	Food Waste	9.8%	5.7%	14.9%
Total Food Waste		9.8%	5.7%	14.9%
Wood	Non-Treated	1.3%	0.3%	3.0%
Wood	Treated	2.8%	1.1%	5.4%
Total Wood		4.2%	1.6%	7.9%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	6.8%	2.8%	12.4%
Total Demolition / Renovation / Construction Debris		6.8%	2.8%	12.4%

Boone County Landfill - Residential Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.0%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	1.0%	0.3%	2.1%
Durables	Other Durables	2.1%	0.4%	5.1%
Total Durables		3.1%	0.9%	6.5%
Textiles And Leathers	Textiles and Leathers	3.7%	2.3%	5.4%
Total Textiles And Leathers		3.7%	2.3%	5.4%
Diapers	Diapers	2.3%	1.0%	4.2%
Total Diapers		2.3%	1.0%	4.2%
Rubber	Rubber	0.4%	0.1%	0.8%
Total Rubber		0.4%	0.1%	0.8%
HHMS	Automotive Products	0.1%	0.0%	0.4%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.1%	0.0%	0.1%
HHMS	Other HHM	0.2%	0.0%	0.4%
HHMS	Paints and Solvent	0.0%	0.0%	0.1%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.4%	0.1%	0.7%
Sharps	Sharps	0.0%	0.0%	0.1%
Total Sharps		0.0%	0.0%	0.1%
Other Organic	Other Organic	0.9%	0.5%	1.5%
Total Other Organic		0.9%	0.5%	1.5%
Other Inorganic	Other Inorganic	6.7%	1.2%	16.0%
Total Other Inorganic		6.7%	1.2%	16.0%
Fines/Super Mix	Fines/Super Mix	2.4%	1.4%	3.6%
Total Fines/Super Mix		2.4%	1.4%	3.6%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Boone County Landfill - ICI Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	4.6%	0.9%	10.7%
Paper	High Grade Office	1.9%	0.3%	5.0%
Paper	Magazines	1.1%	0.2%	2.8%
Paper	Mixed Recyclable Paper	6.8%	1.8%	14.5%
Paper	Newsprint	2.3%	0.4%	5.4%
Paper	Non-Recyclable Paper	14.4%	1.3%	38.0%
Paper	OCC and Kraft Bags	3.5%	1.4%	6.4%
Total Paper		34.5%	10.2%	64.2%
Plastics	# 1 PET Deposit Beverage Containers	0.1%	0.0%	0.2%
Plastics	# 1 PET Beverage Containers	0.3%	0.1%	0.6%
Plastics	# 2 HDPE Containers	0.5%	0.2%	1.1%
Plastics	Film/Wrap/Bags	3.7%	1.3%	7.4%
Plastics	Other # 1 PET Containers	0.2%	0.0%	0.4%
Plastics	Other Plastic Containers	0.2%	0.0%	0.5%
Plastics	Other Plastic Products	5.9%	2.1%	11.6%
Total Plastics		11.0%	4.7%	19.5%
Metals	Aluminum Beverage Containers	0.2%	0.0%	0.5%
Metals	Aluminum Deposit Beverage Containers	0.0%	0.0%	0.1%
Metals	Ferrous Food and Beverage Containers	0.5%	0.1%	1.3%
Metals	Other Aluminum Containers	0.1%	0.0%	0.3%
Metals	Other Ferrous Metals	0.2%	0.0%	0.5%
Metals	Other Non-Ferrous Scrap	0.1%	0.0%	0.2%
Total Metals		1.1%	0.3%	2.4%
Glass	Blue Glass	0.0%	0.0%	0.1%
Glass	Brown Glass	0.0%	0.0%	0.0%
Glass	Clear Glass	1.0%	0.2%	2.4%
Glass	Glass Deposit Containers	0.0%	0.0%	0.0%
Glass	Green Glass	0.0%	0.0%	0.0%
Glass	Other Mixed Cullet	0.0%	0.0%	0.1%
Total Glass		1.1%	0.2%	2.6%
Yard Waste	Pumpkins	0.0%	0.0%	0.0%
Yard Waste	Yard Waste	0.1%	0.0%	0.3%
Total Yard Waste		0.1%	0.0%	0.3%
Food Waste	Food Waste	11.7%	2.0%	28.0%
Total Food Waste		11.7%	2.0%	28.0%
Wood	Non-Treated	1.6%	0.3%	3.9%
Wood	Treated	1.7%	0.2%	4.6%
Total Wood		3.3%	0.8%	7.4%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	13.6%	1.8%	33.7%
Total Demolition / Renovation / Construction Debris		13.6%	1.8%	33.7%

Boone County Landfill - ICI Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.0%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	1.5%	0.3%	3.6%
Durables	Other Durables	13.4%	1.3%	35.4%
Total Durables		14.9%	2.3%	35.7%
Textiles And Leathers	Textiles and Leathers	0.7%	0.2%	1.7%
Total Textiles And Leathers		0.7%	0.2%	1.7%
Diapers	Diapers	0.5%	0.0%	1.3%
Total Diapers		0.5%	0.0%	1.3%
Rubber	Rubber	0.1%	0.0%	0.2%
Total Rubber		0.1%	0.0%	0.2%
HHMS	Automotive Products	0.3%	0.0%	0.8%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.1%	0.0%	0.3%
HHMS	Other HHM	0.0%	0.0%	0.0%
HHMS	Paints and Solvent	0.0%	0.0%	0.0%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.4%	0.0%	1.1%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	0.3%	0.0%	0.9%
Total Other Organic		0.3%	0.0%	0.9%
Other Inorganic	Other Inorganic	5.6%	0.6%	15.2%
Total Other Inorganic		5.6%	0.6%	15.2%
Fines/Super Mix	Fines/Super Mix	1.1%	0.2%	2.7%
Total Fines/Super Mix		1.1%	0.2%	2.7%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Boone County Landfill - Mixed Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	6.0%	4.6%	7.6%
Paper	High Grade Office	1.5%	1.0%	2.1%
Paper	Magazines	3.1%	2.0%	4.4%
Paper	Mixed Recyclable Paper	8.6%	5.6%	12.1%
Paper	Newsprint	6.7%	4.4%	9.5%
Paper	Non-Recyclable Paper	1.7%	1.1%	2.4%
Paper	OCC and Kraft Bags	9.0%	5.1%	13.8%
Total Paper		36.5%	28.6%	44.9%
Plastics	# 1 PET Deposit Beverage Containers	0.1%	0.1%	0.2%
Plastics	# 1 PET Beverage Containers	0.6%	0.4%	0.8%
Plastics	# 2 HDPE Containers	1.2%	0.9%	1.6%
Plastics	Film/Wrap/Bags	4.3%	3.3%	5.4%
Plastics	Other # 1 PET Containers	0.4%	0.2%	0.5%
Plastics	Other Plastic Containers	0.4%	0.3%	0.5%
Plastics	Other Plastic Products	4.1%	3.1%	5.3%
Total Plastics		11.1%	8.6%	13.8%
Metals	Aluminum Beverage Containers	0.1%	0.1%	0.2%
Metals	Aluminum Deposit Beverage Containers	0.1%	0.1%	0.2%
Metals	Ferrous Food and Beverage Containers	1.2%	0.8%	1.7%
Metals	Other Aluminum Containers	0.2%	0.1%	0.3%
Metals	Other Ferrous Metals	3.6%	1.8%	6.0%
Metals	Other Non-Ferrous Scrap	0.6%	0.3%	0.9%
Total Metals		5.8%	3.6%	8.6%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.1%	0.1%	0.2%
Glass	Clear Glass	1.0%	0.6%	1.3%
Glass	Glass Deposit Containers	0.1%	0.0%	0.1%
Glass	Green Glass	0.1%	0.0%	0.1%
Glass	Other Mixed Cullet	0.3%	0.1%	0.5%
Total Glass		1.5%	1.0%	2.0%
Yard Waste	Pumpkins	0.0%	0.0%	0.0%
Yard Waste	Yard Waste	0.8%	0.4%	1.5%
Total Yard Waste		0.8%	0.4%	1.5%
Food Waste	Food Waste	9.1%	6.3%	12.4%
Total Food Waste		9.1%	6.3%	12.4%
Wood	Non-Treated	0.4%	0.2%	0.7%
Wood	Treated	0.9%	0.5%	1.5%
Total Wood		1.3%	0.7%	2.0%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	10.7%	4.4%	19.2%
Total Demolition / Renovation / Construction Debris		10.7%	4.4%	19.2%

Boone County Landfill - Mixed Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.0%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	1.5%	0.7%	2.6%
Durables	Other Durables	1.7%	0.5%	3.6%
Total Durables		3.2%	1.4%	5.7%
Textiles And Leathers	Textiles and Leathers	2.5%	1.4%	3.8%
Total Textiles And Leathers		2.5%	1.4%	3.8%
Diapers	Diapers	4.2%	2.5%	6.2%
Total Diapers		4.2%	2.5%	6.2%
Rubber	Rubber	0.3%	0.1%	0.4%
Total Rubber		0.3%	0.1%	0.4%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.0%	0.0%	0.1%
HHMS	Other HHM	0.0%	0.0%	0.1%
HHMS	Paints and Solvent	0.7%	0.2%	1.4%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.8%	0.3%	1.5%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	1.9%	1.1%	2.9%
Total Other Organic		1.9%	1.1%	2.9%
Other Inorganic	Other Inorganic	4.0%	2.1%	6.6%
Total Other Inorganic		4.0%	2.1%	6.6%
Fines/Super Mix	Fines/Super Mix	2.3%	1.6%	3.1%
Total Fines/Super Mix		2.3%	1.6%	3.1%
Other	Other	4.0%	0.7%	9.9%
Total Other		4.0%	0.7%	9.9%
Grand Total		100.0%		

Boone County Landfill - MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	5.8%	4.5%	7.2%
Paper	High Grade Office	1.4%	1.0%	2.0%
Paper	Magazines	2.7%	1.9%	3.6%
Paper	Mixed Recyclable Paper	9.2%	6.8%	12.1%
Paper	Newsprint	5.6%	4.2%	7.3%
Paper	Non-Recyclable Paper	4.2%	2.4%	6.5%
Paper	OCC and Kraft Bags	7.0%	4.8%	9.5%
Total Paper		36.0%	29.3%	43.0%
Plastics	# 1 PET Deposit Beverage Containers	0.1%	0.1%	0.2%
Plastics	# 1 PET Beverage Containers	0.5%	0.4%	0.7%
Plastics	# 2 HDPE Containers	1.1%	0.8%	1.4%
Plastics	Film/Wrap/Bags	4.2%	3.4%	5.1%
Plastics	Other # 1 PET Containers	0.3%	0.3%	0.5%
Plastics	Other Plastic Containers	0.5%	0.4%	0.7%
Plastics	Other Plastic Products	4.5%	3.5%	5.5%
Total Plastics		11.3%	9.4%	13.3%
Metals	Aluminum Beverage Containers	0.2%	0.1%	0.3%
Metals	Aluminum Deposit Beverage Containers	0.1%	0.1%	0.1%
Metals	Ferrous Food and Beverage Containers	1.1%	0.8%	1.4%
Metals	Other Aluminum Containers	0.2%	0.1%	0.3%
Metals	Other Ferrous Metals	3.4%	2.1%	5.0%
Metals	Other Non-Ferrous Scrap	0.4%	0.2%	0.6%
Total Metals		5.3%	3.8%	7.1%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.1%	0.0%	0.1%
Glass	Clear Glass	1.1%	0.8%	1.4%
Glass	Glass Deposit Containers	0.2%	0.1%	0.3%
Glass	Green Glass	0.1%	0.0%	0.1%
Glass	Other Mixed Cullet	0.4%	0.2%	0.5%
Total Glass		1.8%	1.3%	2.3%
Yard Waste	Pumpkins	0.1%	0.1%	0.2%
Yard Waste	Yard Waste	0.7%	0.4%	1.0%
Total Yard Waste		0.8%	0.5%	1.2%
Food Waste	Food Waste	9.8%	7.1%	12.9%
Total Food Waste		9.8%	7.1%	12.9%
Wood	Non-Treated	0.9%	0.5%	1.3%
Wood	Treated	1.6%	1.0%	2.3%
Total Wood		2.4%	1.6%	3.4%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	10.2%	6.0%	15.5%
Total Demolition / Renovation / Construction Debris		10.2%	6.0%	15.5%

Boone County Landfill - MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.0%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	1.4%	0.8%	2.0%
Durables	Other Durables	4.1%	2.0%	6.9%
Total Durables		5.5%	3.1%	8.5%
Textiles And Leathers	Textiles and Leathers	2.5%	1.7%	3.3%
Total Textiles And Leathers		2.5%	1.7%	3.3%
Diapers	Diapers	3.0%	2.0%	4.1%
Total Diapers		3.0%	2.0%	4.1%
Rubber	Rubber	0.3%	0.2%	0.4%
Total Rubber		0.3%	0.2%	0.4%
HHMS	Automotive Products	0.1%	0.0%	0.2%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.1%	0.0%	0.1%
HHMS	Other HHM	0.1%	0.0%	0.1%
HHMS	Paints and Solvent	0.4%	0.2%	0.7%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.6%	0.3%	0.9%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	1.3%	0.9%	1.9%
Total Other Organic		1.3%	0.9%	1.9%
Other Inorganic	Other Inorganic	5.0%	2.9%	7.7%
Total Other Inorganic		5.0%	2.9%	7.7%
Fines/Super Mix	Fines/Super Mix	2.1%	1.6%	2.7%
Total Fines/Super Mix		2.1%	1.6%	2.7%
Other	Other	2.2%	0.7%	4.4%
Total Other		2.2%	0.7%	4.4%
Grand Total		100.0%		

Des Moines County Regional Waste
Commission Landfill

Des Moines County Regional Waste Commission Landfill -
Solid Waste Composition

Material Group	Material	Average Percent Composition
Paper	Compostable Paper	5.41%
Paper	High Grade Office	1.89%
Paper	Magazines	1.22%
Paper	Mixed Recyclable Paper	8.91%
Paper	Newsprint	2.00%
Paper	Non-Recyclable Paper	1.62%
Paper	OCC and Kraft Bags	8.08%
Total Paper		29.12%
Plastics	# 1 PET Deposit Beverage Containers	0.16%
Plastics	# 1 PET Beverage Containers	0.44%
Plastics	# 2 HDPE Containers	0.85%
Plastics	Film/Wrap/Bags	6.86%
Plastics	Other # 1 PET Containers	0.15%
Plastics	Other Plastic Containers	0.34%
Plastics	Other Plastic Products	5.99%
Total Plastics		14.79%
Metals	Aluminum Beverage Containers	0.10%
Metals	Aluminum Deposit Beverage Containers	0.17%
Metals	Ferrous Food and Beverage Containers	0.93%
Metals	Other Aluminum Containers	0.10%
Metals	Other Ferrous Metals	1.08%
Metals	Other Non-Ferrous Scrap	0.38%
Total Metals		2.76%
Glass	Blue Glass	0.07%
Glass	Brown Glass	0.06%
Glass	Clear Glass	0.64%
Glass	Glass Deposit Containers	0.24%
Glass	Green Glass	0.18%
Glass	Other Mixed Cullet	0.18%
Total Glass		1.37%
Yard Waste	Pumpkins	1.25%
Yard Waste	Yard Waste	0.80%
Total Yard Waste		2.05%
Food Waste	Food Waste	11.78%
Total Food Waste		11.78%
Wood	Non-Treated	2.57%
Wood	Treated	2.41%
Total Wood		4.98%
Demolition / Renovation / Construction Debris	C & D Debris	19.05%
Total Demolition / Renovation / Construction Debris		19.05%

Des Moines County Regional Waste Commission Landfill -
Solid Waste Composition

Material Group	Material	Average Percent Composition
Durables	Cellphones and Chargers	0.00%
Durables	Central Processing Units/Peripherals	0.93%
Durables	Computer Monitors/TV'S	0.00%
Durables	Electrical and Household Appliances	1.38%
Durables	Other Durables	1.50%
Total Durables		3.81%
Textiles And Leathers	Textiles and Leathers	2.16%
Total Textiles And Leathers		2.16%
Diapers	Diapers	1.43%
Total Diapers		1.43%
Rubber	Rubber	0.47%
Total Rubber		0.47%
HHMS	Automotive Products	0.15%
HHMS	Household Cleaners	0.02%
HHMS	Lead Acid Batteries	0.00%
HHMS	Mercury Containing Products	0.00%
HHMS	Other Batteries	0.16%
HHMS	Other HHM	0.02%
HHMS	Paints and Solvent	0.21%
HHMS	Pesticides, Herbicides, Fungicides	0.00%
Total Household Hazardous Materials		0.56%
Sharps	Sharps	0.07%
Total Sharps		0.07%
Other Organic	Other Organic	0.69%
Total Other Organic		0.69%
Other Inorganic	Other Inorganic	1.29%
Total Other Inorganic		1.29%
Fines/Super Mix	Fines/Super Mix	1.74%
Total Fines/Super Mix		1.74%
Other	Other	1.88%
Total Special Waste		1.88%
Total Other		1.88%
Grand Total		100%

Des Moines County Regional Waste Commission Landfill - Residential Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	7.1%	5.2%	9.3%
Paper	High Grade Office	1.4%	0.9%	2.0%
Paper	Magazines	3.5%	2.3%	4.8%
Paper	Mixed Recyclable Paper	8.9%	7.4%	10.6%
Paper	Newsprint	3.8%	2.6%	5.2%
Paper	Non-Recyclable Paper	3.4%	2.2%	4.9%
Paper	OCC and Kraft Bags	3.4%	2.1%	5.0%
Total Paper		31.5%	25.4%	38.0%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.3%
Plastics	# 1 PET Beverage Containers	0.7%	0.4%	0.9%
Plastics	# 2 HDPE Containers	1.8%	1.0%	2.7%
Plastics	Film/Wrap/Bags	4.8%	4.0%	5.7%
Plastics	Other # 1 PET Containers	0.4%	0.3%	0.5%
Plastics	Other Plastic Containers	0.5%	0.3%	0.7%
Plastics	Other Plastic Products	5.5%	4.6%	6.5%
Total Plastics		13.9%	12.0%	15.9%
Metals	Aluminum Beverage Containers	0.1%	0.0%	0.1%
Metals	Aluminum Deposit Beverage Containers	0.2%	0.1%	0.4%
Metals	Ferrous Food and Beverage Containers	2.1%	1.4%	3.0%
Metals	Other Aluminum Containers	0.2%	0.1%	0.2%
Metals	Other Ferrous Metals	1.2%	0.8%	1.6%
Metals	Other Non-Ferrous Scrap	0.6%	0.4%	0.8%
Total Metals		4.3%	3.4%	5.3%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.1%	0.0%	0.2%
Glass	Clear Glass	1.8%	1.1%	2.8%
Glass	Glass Deposit Containers	0.5%	0.2%	0.8%
Glass	Green Glass	0.0%	0.0%	0.0%
Glass	Other Mixed Cullet	0.4%	0.2%	0.6%
Total Glass		2.8%	1.8%	3.9%
Yard Waste	Pumpkins	1.1%	0.4%	1.9%
Yard Waste	Yard Waste	2.4%	0.8%	4.8%
Total Yard Waste		3.4%	1.5%	6.2%
Food Waste	Food Waste	11.8%	9.5%	14.3%
Total Food Waste		11.8%	9.5%	14.3%
Wood	Non-Treated	0.8%	0.3%	1.6%
Wood	Treated	1.0%	0.4%	1.9%
Total Wood		1.9%	0.9%	3.3%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	3.7%	1.3%	7.1%
Total Demolition / Renovation / Construction Debris		3.7%	1.3%	7.1%

Des Moines County Regional Waste Commission Landfill - Residential Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.1%	0.0%	0.1%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	1.1%	0.5%	1.9%
Durables	Other Durables	3.2%	1.0%	6.4%
Total Durables		4.3%	1.7%	8.0%
Textiles And Leathers	Textiles and Leathers	6.6%	4.1%	9.5%
Total Textiles And Leathers		6.6%	4.1%	9.5%
Diapers	Diapers	4.7%	2.7%	7.1%
Total Diapers		4.7%	2.7%	7.1%
Rubber	Rubber	0.1%	0.0%	0.1%
Total Rubber		0.1%	0.0%	0.1%
HHMS	Automotive Products	0.1%	0.0%	0.2%
HHMS	Household Cleaners	0.1%	0.0%	0.1%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.7%	0.4%	1.2%
HHMS	Other HHM	0.1%	0.0%	0.2%
HHMS	Paints and Solvent	1.0%	0.3%	2.1%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		2.0%	1.0%	3.3%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	2.3%	1.7%	3.1%
Total Other Organic		2.3%	1.7%	3.1%
Other Inorganic	Other Inorganic	4.0%	2.3%	6.2%
Total Other Inorganic		4.0%	2.3%	6.2%
Fines/Super Mix	Fines/Super Mix	2.8%	2.1%	3.5%
Total Fines/Super Mix		2.8%	2.1%	3.5%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Des Moines County Regional Waste Commission Landfill - ICI Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	5.4%	3.6%	7.7%
Paper	High Grade Office	2.6%	1.3%	4.2%
Paper	Magazines	0.7%	0.3%	1.2%
Paper	Mixed Recyclable Paper	13.4%	7.6%	20.5%
Paper	Newsprint	1.0%	0.5%	1.7%
Paper	Non-Recyclable Paper	1.6%	1.0%	2.3%
Paper	OCC and Kraft Bags	12.3%	9.1%	16.0%
Total Paper		37.0%	30.3%	44.0%
Plastics	# 1 PET Deposit Beverage Containers	0.1%	0.1%	0.2%
Plastics	# 1 PET Beverage Containers	0.4%	0.2%	0.7%
Plastics	# 2 HDPE Containers	0.8%	0.5%	1.2%
Plastics	Film/Wrap/Bags	10.6%	7.3%	14.4%
Plastics	Other # 1 PET Containers	0.1%	0.0%	0.2%
Plastics	Other Plastic Containers	0.4%	0.2%	0.8%
Plastics	Other Plastic Products	8.4%	4.5%	13.3%
Total Plastics		20.8%	14.2%	28.4%
Metals	Aluminum Beverage Containers	0.2%	0.1%	0.3%
Metals	Aluminum Deposit Beverage Containers	0.2%	0.1%	0.3%
Metals	Ferrous Food and Beverage Containers	0.7%	0.3%	1.2%
Metals	Other Aluminum Containers	0.1%	0.0%	0.1%
Metals	Other Ferrous Metals	1.0%	0.5%	1.8%
Metals	Other Non-Ferrous Scrap	0.1%	0.1%	0.3%
Total Metals		2.2%	1.3%	3.3%
Glass	Blue Glass	0.0%	0.0%	0.1%
Glass	Brown Glass	0.0%	0.0%	0.0%
Glass	Clear Glass	0.4%	0.2%	0.7%
Glass	Glass Deposit Containers	0.1%	0.0%	0.3%
Glass	Green Glass	0.3%	0.1%	0.7%
Glass	Other Mixed Cullet	0.1%	0.0%	0.3%
Total Glass		1.0%	0.4%	1.8%
Yard Waste	Pumpkins	2.1%	0.6%	4.5%
Yard Waste	Yard Waste	0.7%	0.2%	1.5%
Total Yard Waste		2.8%	0.9%	5.8%
Food Waste	Food Waste	16.0%	9.3%	24.0%
Total Food Waste		16.0%	9.3%	24.0%
Wood	Non-Treated	4.9%	1.8%	9.3%
Wood	Treated	4.7%	1.8%	8.8%
Total Wood		9.6%	4.7%	15.9%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	1.5%	0.3%	3.5%
Total Demolition / Renovation / Construction Debris		1.5%	0.3%	3.5%

Des Moines County Regional Waste Commission Landfill - ICI Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.1%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	2.2%	0.6%	4.7%
Durables	Other Durables	1.7%	0.4%	3.8%
Total Durables		3.9%	1.3%	7.8%
Textiles And Leathers	Textiles and Leathers	0.7%	0.4%	1.1%
Total Textiles And Leathers		0.7%	0.4%	1.1%
Diapers	Diapers	0.3%	0.1%	0.7%
Total Diapers		0.3%	0.1%	0.7%
Rubber	Rubber	0.8%	0.4%	1.4%
Total Rubber		0.8%	0.4%	1.4%
HHMS	Automotive Products	0.3%	0.1%	0.7%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.0%	0.0%	0.0%
HHMS	Other HHM	0.0%	0.0%	0.0%
HHMS	Paints and Solvent	0.1%	0.0%	0.1%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.4%	0.1%	0.8%
Sharps	Sharps	0.2%	0.0%	0.3%
Total Sharps		0.2%	0.0%	0.3%
Other Organic	Other Organic	0.5%	0.2%	0.8%
Total Other Organic		0.5%	0.2%	0.8%
Other Inorganic	Other Inorganic	0.6%	0.2%	1.3%
Total Other Inorganic		0.6%	0.2%	1.3%
Fines/Super Mix	Fines/Super Mix	1.7%	1.0%	2.5%
Total Fines/Super Mix		1.7%	1.0%	2.5%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Des Moines County Regional Waste Commission Landfill - Mixed Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	9.7%	7.3%	12.4%
Paper	High Grade Office	2.6%	0.9%	5.2%
Paper	Magazines	2.0%	0.8%	3.7%
Paper	Mixed Recyclable Paper	6.8%	5.4%	8.3%
Paper	Newsprint	5.2%	1.5%	11.0%
Paper	Non-Recyclable Paper	1.9%	1.0%	3.1%
Paper	OCC and Kraft Bags	10.1%	4.4%	17.6%
Total Paper		38.2%	30.9%	45.8%
Plastics	# 1 PET Deposit Beverage Containers	0.3%	0.1%	0.6%
Plastics	# 1 PET Beverage Containers	0.7%	0.5%	1.0%
Plastics	# 2 HDPE Containers	1.1%	0.8%	1.5%
Plastics	Film/Wrap/Bags	6.5%	4.7%	8.6%
Plastics	Other # 1 PET Containers	0.2%	0.0%	0.6%
Plastics	Other Plastic Containers	0.4%	0.1%	0.7%
Plastics	Other Plastic Products	6.7%	4.7%	9.1%
Total Plastics		16.0%	12.0%	20.4%
Metals	Aluminum Beverage Containers	0.1%	0.0%	0.2%
Metals	Aluminum Deposit Beverage Containers	0.3%	0.1%	0.6%
Metals	Ferrous Food and Beverage Containers	1.5%	0.5%	3.1%
Metals	Other Aluminum Containers	0.3%	0.1%	0.6%
Metals	Other Ferrous Metals	2.4%	0.6%	5.2%
Metals	Other Non-Ferrous Scrap	1.3%	0.2%	3.1%
Total Metals		5.8%	3.1%	9.4%
Glass	Blue Glass	0.3%	0.0%	1.0%
Glass	Brown Glass	0.3%	0.0%	0.9%
Glass	Clear Glass	0.9%	0.2%	2.0%
Glass	Glass Deposit Containers	0.6%	0.1%	1.4%
Glass	Green Glass	0.2%	0.0%	0.6%
Glass	Other Mixed Cullet	0.3%	0.1%	0.7%
Total Glass		2.6%	0.9%	5.0%
Yard Waste	Pumpkins	0.5%	0.0%	1.4%
Yard Waste	Yard Waste	0.6%	0.1%	1.6%
Total Yard Waste		1.0%	0.1%	2.7%
Food Waste	Food Waste	13.8%	5.9%	24.2%
Total Food Waste		13.8%	5.9%	24.2%
Wood	Non-Treated	0.8%	0.1%	2.2%
Wood	Treated	0.3%	0.0%	1.1%
Total Wood		1.1%	0.1%	3.2%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	0.6%	0.0%	2.2%
Total Demolition / Renovation / Construction Debris		0.6%	0.0%	2.2%

Des Moines County Regional Waste Commission Landfill - Mixed Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	5.1%	0.1%	16.7%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	1.0%	0.1%	2.7%
Durables	Other Durables	1.1%	0.0%	4.0%
Total Durables		7.3%	0.7%	19.8%
Textiles And Leathers	Textiles and Leathers	4.4%	1.6%	8.7%
Total Textiles And Leathers		4.4%	1.6%	8.7%
Diapers	Diapers	2.9%	0.6%	6.8%
Total Diapers		2.9%	0.6%	6.8%
Rubber	Rubber	0.4%	0.1%	0.9%
Total Rubber		0.4%	0.1%	0.9%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.2%	0.0%	0.6%
HHMS	Other HHM	0.0%	0.0%	0.0%
HHMS	Paints and Solvent	0.2%	0.0%	0.5%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.3%	0.0%	1.1%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	0.6%	0.2%	1.2%
Total Other Organic		0.6%	0.2%	1.2%
Other Inorganic	Other Inorganic	2.0%	0.6%	4.3%
Total Other Inorganic		2.0%	0.6%	4.3%
Fines/Super Mix	Fines/Super Mix	2.9%	1.9%	4.0%
Total Fines/Super Mix		2.9%	1.9%	4.0%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Des Moines County Regional Waste Commission Landfill - MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	6.7%	5.5%	8.1%
Paper	High Grade Office	2.3%	1.6%	3.4%
Paper	Magazines	1.5%	1.1%	2.0%
Paper	Mixed Recyclable Paper	11.1%	7.8%	15.1%
Paper	Newsprint	2.5%	1.7%	3.7%
Paper	Non-Recyclable Paper	2.0%	1.6%	2.6%
Paper	OCC and Kraft Bags	10.0%	7.9%	12.6%
Total Paper		36.2%	32.0%	40.6%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.1%	0.3%
Plastics	# 1 PET Beverage Containers	0.5%	0.4%	0.7%
Plastics	# 2 HDPE Containers	1.1%	0.8%	1.4%
Plastics	Film/Wrap/Bags	8.5%	6.6%	10.7%
Plastics	Other # 1 PET Containers	0.2%	0.1%	0.3%
Plastics	Other Plastic Containers	0.4%	0.3%	0.6%
Plastics	Other Plastic Products	7.4%	5.2%	10.3%
Total Plastics		18.4%	14.5%	22.8%
Metals	Aluminum Beverage Containers	0.1%	0.1%	0.2%
Metals	Aluminum Deposit Beverage Containers	0.2%	0.1%	0.3%
Metals	Ferrous Food and Beverage Containers	1.2%	0.8%	1.6%
Metals	Other Aluminum Containers	0.1%	0.1%	0.2%
Metals	Other Ferrous Metals	1.3%	0.9%	2.0%
Metals	Other Non-Ferrous Scrap	0.5%	0.3%	0.8%
Total Metals		3.4%	2.7%	4.4%
Glass	Blue Glass	0.1%	0.0%	0.2%
Glass	Brown Glass	0.1%	0.0%	0.2%
Glass	Clear Glass	0.8%	0.6%	1.1%
Glass	Glass Deposit Containers	0.3%	0.2%	0.5%
Glass	Green Glass	0.2%	0.1%	0.5%
Glass	Other Mixed Cullet	0.2%	0.1%	0.3%
Total Glass		1.7%	1.2%	2.4%
Yard Waste	Pumpkins	1.6%	0.7%	2.9%
Yard Waste	Yard Waste	1.0%	0.6%	1.7%
Total Yard Waste		2.6%	1.4%	4.3%
Food Waste	Food Waste	14.6%	10.6%	19.6%
Total Food Waste		14.6%	10.6%	19.6%
Wood	Non-Treated	3.2%	1.5%	5.7%
Wood	Treated	3.0%	1.4%	5.3%
Total Wood		6.2%	3.4%	9.8%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	1.7%	0.9%	3.1%
Total Demolition / Renovation / Construction Debris		1.7%	0.9%	3.1%

Des Moines County Regional Waste Commission Landfill - MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	1.2%	0.2%	3.4%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	1.7%	0.8%	3.1%
Durables	Other Durables	1.9%	1.0%	3.3%
Total Durables		4.7%	2.7%	8.1%
Textiles And Leathers	Textiles and Leathers	2.7%	1.9%	3.7%
Total Textiles And Leathers		2.7%	1.9%	3.7%
Diapers	Diapers	1.8%	1.2%	2.7%
Total Diapers		1.8%	1.2%	2.7%
Rubber	Rubber	0.6%	0.3%	0.9%
Total Rubber		0.6%	0.3%	0.9%
HHMS	Automotive Products	0.2%	0.1%	0.4%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.2%	0.1%	0.3%
HHMS	Other HHM	0.0%	0.0%	0.1%
HHMS	Paints and Solvent	0.3%	0.1%	0.5%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.7%	0.5%	1.1%
Sharps	Sharps	0.1%	0.0%	0.2%
Total Sharps		0.1%	0.0%	0.2%
Other Organic	Other Organic	0.9%	0.6%	1.1%
Total Other Organic		0.9%	0.6%	1.1%
Other Inorganic	Other Inorganic	1.6%	1.1%	2.3%
Total Other Inorganic		1.6%	1.1%	2.3%
Fines/Super Mix	Fines/Super Mix	2.2%	1.7%	2.7%
Total Fines/Super Mix		2.2%	1.7%	2.7%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Cedar Rapids/Linn County Solid Waste Agency
Landfill Site #1

**Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1 -
Solid Waste Composition**

Material Group	Material	Average Percent Composition
Paper	Compostable Paper	5.67%
Paper	High Grade Office	1.28%
Paper	Magazines	0.81%
Paper	Mixed Recyclable Paper	4.25%
Paper	Newsprint	1.91%
Paper	Non-Recyclable Paper	3.46%
Paper	OCC and Kraft Bags	2.77%
Total Paper		20.15%
Plastics	# 1 PET Deposit Beverage Containers	0.22%
Plastics	# 1 PET Beverage Containers	0.38%
Plastics	# 2 HDPE Containers	0.71%
Plastics	Film/Wrap/Bags	5.03%
Plastics	Other # 1 PET Containers	0.18%
Plastics	Other Plastic Containers	0.35%
Plastics	Other Plastic Products	5.19%
Total Plastics		12.05%
Metals	Aluminum Beverage Containers	0.06%
Metals	Aluminum Deposit Beverage Containers	0.11%
Metals	Ferrous Food and Beverage Containers	1.38%
Metals	Other Aluminum Containers	0.06%
Metals	Other Ferrous Metals	2.84%
Metals	Other Non-Ferrous Scrap	0.37%
Total Metals		4.82%
Glass	Blue Glass	0.04%
Glass	Brown Glass	0.03%
Glass	Clear Glass	0.65%
Glass	Glass Deposit Containers	0.23%
Glass	Green Glass	0.09%
Glass	Other Mixed Cullet	0.82%
Total Glass		1.86%
Yard Waste	Pumpkins	0.59%
Yard Waste	Yard Waste	0.69%
Total Yard Waste		1.28%
Food Waste	Food Waste	9.94%
Total Food Waste		9.94%
Wood	Non-Treated	3.37%
Wood	Treated	4.89%
Total Wood		9.62%
Demolition / Renovation / Construction Debris	C & D Debris	15.78%
Total Demolition / Renovation / Construction Debris		15.78%

**Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1 -
Solid Waste Composition**

Material Group	Material	Average Percent Composition
Durables	Cell phones and Chargers	0.01%
Durables	Central Processing Units/Peripherals	0.13%
Durables	Computer Monitors/TV'S	0.16%
Durables	Electrical and Household Appliances	0.87%
Durables	Other Durables	2.25%
Total Durables		3.41%
Textiles And Leathers	Textiles and Leathers	2.63%
Total Textiles And Leathers		2.63%
Diapers	Diapers	2.03%
Total Diapers		2.03%
Rubber	Rubber	0.18%
Total Rubber		0.18%
HHMS	Automotive Products	0.01%
HHMS	Household Cleaners	0.02%
HHMS	Lead Acid Batteries	0.00%
HHMS	Mercury Containing Products	0.00%
HHMS	Other Batteries	0.25%
HHMS	Other HHM	0.14%
HHMS	Paints and Solvent	0.02%
HHMS	Pesticides, Herbicides, Fungicides	0.00%
Total Household Hazardous Materials		0.44%
Sharps	Sharps	0.00%
Total Sharps		0.00%
Other Organic	Other Organic	0.96%
Total Other Organic		0.96%
Other Inorganic	Other Inorganic	2.23%
Total Other Inorganic		2.23%
Fines/Super Mix	Fines/Super Mix	1.68%
Total Fines/Super Mix		1.68%
Other	Other	1.09%
Total Other		1.09%
Special Waste		9.86%
Total Special Waste		9.86%
Grand Total		100.00%

Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1 - Residential Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	9.7%	6.5%	13.6%
Paper	High Grade Office	1.7%	1.0%	2.6%
Paper	Magazines	1.9%	1.2%	2.8%
Paper	Mixed Recyclable Paper	7.9%	5.8%	10.3%
Paper	Newsprint	4.3%	2.9%	6.1%
Paper	Non-Recyclable Paper	2.5%	1.6%	3.8%
Paper	OCC and Kraft Bags	1.3%	0.8%	1.9%
Total Paper		29.5%	22.4%	37.1%
Plastics	# 1 PET Deposit Beverage Containers	0.3%	0.2%	0.4%
Plastics	# 1 PET Beverage Containers	0.8%	0.4%	1.3%
Plastics	# 2 HDPE Containers	1.0%	0.7%	1.4%
Plastics	Film/Wrap/Bags	5.9%	4.1%	7.9%
Plastics	Other # 1 PET Containers	0.5%	0.3%	0.7%
Plastics	Other Plastic Containers	0.5%	0.3%	0.6%
Plastics	Other Plastic Products	6.1%	4.6%	7.9%
Total Plastics		15.1%	12.0%	18.3%
Metals	Aluminum Beverage Containers	0.0%	0.0%	0.0%
Metals	Aluminum Deposit Beverage Containers	0.2%	0.1%	0.3%
Metals	Ferrous Food and Beverage Containers	1.7%	1.1%	2.4%
Metals	Other Aluminum Containers	0.2%	0.1%	0.4%
Metals	Other Ferrous Metals	2.3%	1.3%	3.7%
Metals	Other Non-Ferrous Scrap	0.4%	0.3%	0.6%
Total Metals		4.8%	3.6%	6.2%
Glass	Blue Glass	0.1%	0.0%	0.3%
Glass	Brown Glass	0.1%	0.0%	0.2%
Glass	Clear Glass	1.7%	1.0%	2.5%
Glass	Glass Deposit Containers	0.3%	0.1%	0.6%
Glass	Green Glass	0.1%	0.0%	0.2%
Glass	Other Mixed Cullet	2.9%	0.9%	5.9%
Total Glass		5.2%	2.8%	8.2%
Yard Waste	Pumpkins	0.0%	0.0%	0.0%
Yard Waste	Yard Waste	0.2%	0.1%	0.3%
Total Yard Waste		0.2%	0.1%	0.3%
Food Waste	Food Waste	15.9%	10.7%	21.9%
Total Food Waste		15.9%	10.7%	21.9%
Wood	Non-Treated	0.1%	0.1%	0.2%
Wood	Treated	2.0%	0.6%	4.3%
Total Wood		2.1%	0.7%	4.3%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	2.1%	0.8%	4.2%
Total Demolition / Renovation / Construction Debris		2.1%	0.8%	4.2%

Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1 - Residential Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cell phones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.1%	0.0%	0.3%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	1.1%	0.4%	2.2%
Durables	Other Durables	2.6%	0.6%	5.9%
Total Durables		3.8%	1.3%	7.6%
Textiles And Leathers	Textiles and Leathers	5.0%	3.1%	7.4%
Total Textiles And Leathers		5.0%	3.1%	7.4%
Diapers	Diapers	5.4%	2.9%	8.7%
Total Diapers		5.4%	2.9%	8.7%
Rubber	Rubber	0.2%	0.1%	0.4%
Total Rubber		0.2%	0.1%	0.4%
HHMS	Automotive Products	0.1%	0.0%	0.1%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.7%	0.4%	1.2%
HHMS	Other HHM	0.0%	0.0%	0.1%
HHMS	Paints and Solvent	0.0%	0.0%	0.0%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.8%	0.4%	1.3%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	2.6%	1.5%	3.9%
Total Other Organic		2.6%	1.5%	3.9%
Other Inorganic	Other Inorganic	3.9%	1.9%	6.7%
Total Other Inorganic		3.9%	1.9%	6.7%
Fines/Super Mix	Fines/Super Mix	3.4%	2.4%	4.6%
Total Fines/Super Mix		3.4%	2.4%	4.6%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1 - ICI Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	6.5%	4.1%	9.4%
Paper	High Grade Office	1.6%	1.0%	2.4%
Paper	Magazines	0.5%	0.2%	0.8%
Paper	Mixed Recyclable Paper	4.2%	2.8%	5.8%
Paper	Newsprint	1.3%	0.8%	2.0%
Paper	Non-Recyclable Paper	5.5%	3.2%	8.4%
Paper	OCC and Kraft Bags	5.0%	2.9%	7.6%
Total Paper		24.6%	18.8%	30.9%
Plastics	# 1 PET Deposit Beverage Containers	0.3%	0.2%	0.4%
Plastics	# 1 PET Beverage Containers	0.3%	0.2%	0.5%
Plastics	# 2 HDPE Containers	0.8%	0.5%	1.2%
Plastics	Film/Wrap/Bags	7.3%	4.9%	10.2%
Plastics	Other # 1 PET Containers	0.1%	0.1%	0.2%
Plastics	Other Plastic Containers	0.2%	0.1%	0.3%
Plastics	Other Plastic Products	6.7%	4.3%	9.5%
Total Plastics		15.7%	11.3%	20.6%
Metals	Aluminum Beverage Containers	0.1%	0.0%	0.2%
Metals	Aluminum Deposit Beverage Containers	0.1%	0.1%	0.2%
Metals	Ferrous Food and Beverage Containers	2.0%	0.9%	3.4%
Metals	Other Aluminum Containers	0.0%	0.0%	0.1%
Metals	Other Ferrous Metals	3.6%	1.8%	6.1%
Metals	Other Non-Ferrous Scrap	0.4%	0.2%	0.7%
Total Metals		6.3%	3.8%	9.4%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.0%	0.0%	0.0%
Glass	Clear Glass	0.4%	0.2%	0.6%
Glass	Glass Deposit Containers	0.2%	0.1%	0.4%
Glass	Green Glass	0.1%	0.0%	0.1%
Glass	Other Mixed Cullet	0.1%	0.1%	0.2%
Total Glass		0.8%	0.4%	1.4%
Yard Waste	Pumpkins	1.3%	0.4%	2.5%
Yard Waste	Yard Waste	0.3%	0.1%	0.5%
Total Yard Waste		1.5%	0.6%	2.9%
Food Waste	Food Waste	11.7%	7.0%	17.5%
Total Food Waste		11.7%	7.0%	17.5%
Wood	Non-Treated	6.4%	3.5%	10.2%
Wood	Treated	7.0%	3.0%	12.3%
Total Wood		13.4%	6.7%	22.0%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	11.2%	4.9%	19.8%
Total Demolition / Renovation / Construction Debris		11.2%	4.9%	19.8%

Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1 - ICI Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.1%	0.0%	0.1%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	1.1%	0.4%	2.0%
Durables	Other Durables	3.3%	1.3%	6.3%
Total Durables		4.5%	2.0%	7.9%
Textiles And Leathers	Textiles and Leathers	2.3%	1.1%	3.8%
Total Textiles And Leathers		2.3%	1.1%	3.8%
Diapers	Diapers	1.2%	0.6%	2.0%
Total Diapers		1.2%	0.6%	2.0%
Rubber	Rubber	0.3%	0.1%	0.4%
Total Rubber		0.3%	0.1%	0.4%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.1%	0.0%	0.1%
HHMS	Other HHM	0.2%	0.1%	0.5%
HHMS	Paints and Solvent	0.0%	0.0%	0.1%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.3%	0.1%	0.6%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	0.4%	0.2%	0.6%
Total Other Organic		0.4%	0.2%	0.6%
Other Inorganic	Other Inorganic	1.9%	0.7%	3.7%
Total Other Inorganic		1.9%	0.7%	3.7%
Fines/Super Mix	Fines/Super Mix	1.6%	0.9%	2.5%
Total Fines/Super Mix		1.6%	0.9%	2.5%
Other	Other	2.3%	0.8%	4.6%
Total Other		2.3%	0.8%	4.6%
Grand Total		100.0%		

Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1 - Mixed Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	3.1%	0.5%	7.7%
Paper	High Grade Office	1.2%	0.3%	2.6%
Paper	Magazines	1.4%	0.2%	3.4%
Paper	Mixed Recyclable Paper	4.3%	1.4%	8.7%
Paper	Newsprint	2.6%	0.5%	6.5%
Paper	Non-Recyclable Paper	3.1%	0.1%	9.7%
Paper	OCC and Kraft Bags	1.5%	0.6%	3.0%
Total Paper		17.1%	6.8%	30.9%
Plastics	# 1 PET Deposit Beverage Containers	0.3%	0.1%	0.6%
Plastics	# 1 PET Beverage Containers	0.4%	0.1%	0.9%
Plastics	# 2 HDPE Containers	0.9%	0.2%	2.2%
Plastics	Film/Wrap/Bags	2.3%	0.6%	5.0%
Plastics	Other # 1 PET Containers	0.2%	0.0%	0.6%
Plastics	Other Plastic Containers	1.6%	0.1%	4.8%
Plastics	Other Plastic Products	6.2%	1.7%	13.3%
Total Plastics		11.9%	6.4%	18.8%
Metals	Aluminum Beverage Containers	0.0%	0.0%	0.1%
Metals	Aluminum Deposit Beverage Containers	0.1%	0.0%	0.2%
Metals	Ferrous Food and Beverage Containers	0.7%	0.1%	1.8%
Metals	Other Aluminum Containers	0.1%	0.0%	0.2%
Metals	Other Ferrous Metals	6.0%	0.7%	16.2%
Metals	Other Non-Ferrous Scrap	0.8%	0.1%	2.2%
Total Metals		7.7%	2.0%	16.6%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.0%	0.0%	0.0%
Glass	Clear Glass	0.8%	0.0%	2.6%
Glass	Glass Deposit Containers	0.6%	0.0%	1.8%
Glass	Green Glass	0.4%	0.0%	1.7%
Glass	Other Mixed Cullet	0.6%	0.1%	1.8%
Total Glass		2.4%	0.2%	6.8%
Yard Waste	Pumpkins	0.0%	0.0%	0.0%
Yard Waste	Yard Waste	5.5%	0.2%	17.8%
Total Yard Waste		5.5%	0.2%	17.8%
Food Waste	Food Waste	7.0%	2.1%	14.5%
Total Food Waste		7.0%	2.1%	14.5%
Wood	Non-Treated	3.7%	0.5%	9.6%
Wood	Treated	12.2%	0.8%	34.5%
Total Wood		15.9%	2.6%	37.5%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	14.2%	1.4%	37.3%
Total Demolition / Renovation / Construction Debris		14.2%	1.4%	37.3%

Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1 - Mixed Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cell phones and Chargers	0.1%	0.0%	0.2%
Durables	Central Processing Units/Peripherals	0.7%	0.0%	2.7%
Durables	Computer Monitors/TV'S	1.7%	0.0%	6.4%
Durables	Electrical and Household Appliances	1.1%	0.2%	2.8%
Durables	Other Durables	1.0%	0.0%	3.9%
Total Durables		4.5%	1.8%	8.3%
Textiles And Leathers	Textiles and Leathers	3.9%	0.3%	11.0%
Total Textiles And Leathers		3.9%	0.3%	11.0%
Diapers	Diapers	1.9%	0.3%	4.7%
Total Diapers		1.9%	0.3%	4.7%
Rubber	Rubber	0.2%	0.0%	0.6%
Total Rubber		0.2%	0.0%	0.6%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.1%	0.0%	0.4%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.1%
HHMS	Other Batteries	0.5%	0.0%	1.3%
HHMS	Other HHM	0.3%	0.0%	1.0%
HHMS	Paints and Solvent	0.0%	0.0%	0.1%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.9%	0.2%	1.9%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	1.8%	0.5%	4.0%
Total Other Organic		1.8%	0.5%	4.0%
Other Inorganic	Other Inorganic	4.0%	0.6%	10.1%
Total Other Inorganic		4.0%	0.6%	10.1%
Fines/Super Mix	Fines/Super Mix	1.1%	0.2%	2.6%
Total Fines/Super Mix		1.1%	0.2%	2.6%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1 - MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	7.1%	5.3%	9.1%
Paper	High Grade Office	1.6%	1.2%	2.1%
Paper	Magazines	1.0%	0.7%	1.4%
Paper	Mixed Recyclable Paper	5.3%	4.2%	6.6%
Paper	Newsprint	2.4%	1.7%	3.2%
Paper	Non-Recyclable Paper	4.3%	3.0%	5.9%
Paper	OCC and Kraft Bags	3.5%	2.4%	4.8%
Total Paper		25.2%	21.0%	29.6%
Plastics	# 1 PET Deposit Beverage Containers	0.3%	0.2%	0.4%
Plastics	# 1 PET Beverage Containers	0.5%	0.3%	0.6%
Plastics	# 2 HDPE Containers	0.9%	0.7%	1.2%
Plastics	Film/Wrap/Bags	6.3%	4.8%	8.0%
Plastics	Other # 1 PET Containers	0.2%	0.2%	0.3%
Plastics	Other Plastic Containers	0.4%	0.3%	0.6%
Plastics	Other Plastic Products	6.5%	4.9%	8.2%
Total Plastics		15.0%	12.3%	18.0%
Metals	Aluminum Beverage Containers	0.1%	0.0%	0.1%
Metals	Aluminum Deposit Beverage Containers	0.1%	0.1%	0.2%
Metals	Ferrous Food and Beverage Containers	1.7%	1.1%	2.5%
Metals	Other Aluminum Containers	0.1%	0.0%	0.1%
Metals	Other Ferrous Metals	3.5%	2.3%	5.1%
Metals	Other Non-Ferrous Scrap	0.5%	0.3%	0.6%
Total Metals		6.0%	4.4%	7.8%
Glass	Blue Glass	0.0%	0.0%	0.1%
Glass	Brown Glass	0.0%	0.0%	0.1%
Glass	Clear Glass	0.8%	0.5%	1.1%
Glass	Glass Deposit Containers	0.3%	0.2%	0.4%
Glass	Green Glass	0.1%	0.1%	0.2%
Glass	Other Mixed Cullet	1.0%	0.6%	1.6%
Total Glass		2.3%	1.5%	3.3%
Yard Waste	Pumpkins	0.7%	0.3%	1.3%
Yard Waste	Yard Waste	0.9%	0.5%	1.4%
Total Yard Waste		1.6%	0.8%	2.6%
Food Waste	Food Waste	12.4%	9.1%	16.2%
Total Food Waste		12.4%	9.1%	16.2%
Wood	Non-Treated	4.2%	2.6%	6.2%
Wood	Treated	6.1%	3.5%	9.4%
Total Wood		10.3%	6.2%	15.3%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	8.9%	5.0%	13.6%
Total Demolition / Renovation / Construction Debris		8.9%	5.0%	13.6%

Cedar Rapids/Linn County Solid Waste Agency Landfill Site #1 - MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.2%	0.1%	0.3%
Durables	Computer Monitors/TV'S	0.2%	0.1%	0.3%
Durables	Electrical and Household Appliances	1.1%	0.6%	1.7%
Durables	Other Durables	2.8%	1.5%	4.6%
Total Durables		4.3%	2.5%	6.4%
Textiles And Leathers	Textiles and Leathers	3.3%	2.2%	4.6%
Total Textiles And Leathers		3.3%	2.2%	4.6%
Diapers	Diapers	2.5%	1.6%	3.6%
Total Diapers		2.5%	1.6%	3.6%
Rubber	Rubber	0.2%	0.1%	0.3%
Total Rubber		0.2%	0.1%	0.3%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.3%	0.2%	0.5%
HHMS	Other HHM	0.2%	0.1%	0.3%
HHMS	Paints and Solvent	0.0%	0.0%	0.0%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.5%	0.3%	0.8%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	1.2%	0.8%	1.7%
Total Other Organic		1.2%	0.8%	1.7%
Other Inorganic	Other Inorganic	2.8%	1.6%	4.2%
Total Other Inorganic		2.8%	1.6%	4.2%
Fines/Super Mix	Fines/Super Mix	2.1%	1.5%	2.8%
Total Fines/Super Mix		2.1%	1.5%	2.8%
Other	Other	1.4%	0.6%	2.3%
Total Other		1.4%	0.6%	2.3%
Grand Total		100.0%		

Dubuque Metropolitan Area Solid Waste Agency Landfill

**Dubuque Metropolitan Area Solid Waste Agency Landfill -
Solid Waste Composition**

Material Group	Material	Average Percent Composition
Paper	Compostable Paper	5.37%
Paper	High Grade Office	1.40%
Paper	Magazines	1.61%
Paper	Mixed Recyclable Paper	5.59%
Paper	Newsprint	4.21%
Paper	Non-Recyclable Paper	3.76%
Paper	OCC and Kraft Bags	9.16%
Total Paper		31.09%
Plastics	# 1 PET Deposit Beverage Containers	0.18%
Plastics	# 1 PET Beverage Containers	0.30%
Plastics	# 2 HDPE Containers	0.82%
Plastics	Film/Wrap/Bags	5.39%
Plastics	Other # 1 PET Containers	0.22%
Plastics	Other Plastic Containers	0.33%
Plastics	Other Plastic Products	6.19%
Total Plastics		13.44%
Metals	Aluminum Beverage Containers	0.09%
Metals	Aluminum Deposit Beverage Containers	0.14%
Metals	Ferrous Food and Beverage Containers	0.73%
Metals	Other Aluminum Containers	0.20%
Metals	Other Ferrous Metals	2.45%
Metals	Other Non-Ferrous Scrap	0.32%
Total Metals		3.93%
Glass	Blue Glass	0.00%
Glass	Brown Glass	0.04%
Glass	Clear Glass	0.93%
Glass	Glass Deposit Containers	0.28%
Glass	Green Glass	0.09%
Glass	Other Mixed Cullet	0.54%
Total Glass		1.88%
Yard Waste	Pumpkins	0.12%
Yard Waste	Yard Waste	1.00%
Total Yard Waste		1.12%
Food Waste	Food Waste	11.60%
Total Food Waste		11.60%
Wood	Non-Treated	3.24%
Wood	Treated	4.47%
Total Wood		7.71%
Demolition / Renovation / Construction Debris	C & D Debris	6.44%
Total Demolition / Renovation / Construction Debris		6.44%

**Dubuque Metropolitan Area Solid Waste Agency Landfill -
Solid Waste Composition**

Material Group	Material	Average Percent Composition
Durables	Cellphones and Chargers	0.00%
Durables	Central Processing Units/Peripherals	0.10%
Durables	Computer Monitors/TV'S	0.00%
Durables	Electrical and Household Appliances	2.26%
Durables	Other Durables	3.38%
Total Durables		5.75%
Textiles And Leathers	Textiles and Leathers	5.51%
Total Textiles And Leathers		5.51%
Diapers	Diapers	2.24%
Total Diapers		2.24%
Rubber	Rubber	1.09%
Total Rubber		1.09%
HHMS	Automotive Products	0.00%
HHMS	Household Cleaners	0.01%
HHMS	Lead Acid Batteries	0.00%
HHMS	Mercury Containing Products	0.00%
HHMS	Other Batteries	0.33%
HHMS	Other HHM	0.05%
HHMS	Paints and Solvent	0.54%
HHMS	Pesticides, Herbicides, Fungicides	0.03%
Total Household Hazardous Materials		0.96%
Sharps	Sharps	0.01%
Total Sharps		0.01%
Other Organic	Other Organic	1.41%
Total Other Organic		1.41%
Other Inorganic	Other Inorganic	2.45%
Total Other Inorganic		2.45%
Fines/Super Mix	Fines/Super Mix	2.05%
Total Fines/Super Mix		2.05%
Other	Other	0.00%
Total Other		1.32%
Total Special Waste		1.32%
Grand Total		100.00%

Dubuque Metropolitan Area Solid Waste Agency Landfill - Residential Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	7.3%	5.0%	9.9%
Paper	High Grade Office	1.7%	1.0%	2.6%
Paper	Magazines	1.7%	1.0%	2.5%
Paper	Mixed Recyclable Paper	6.6%	5.2%	8.2%
Paper	Newsprint	3.1%	1.9%	4.5%
Paper	Non-Recyclable Paper	1.7%	1.2%	2.3%
Paper	OCC and Kraft Bags	2.5%	1.4%	3.8%
Total Paper		24.5%	20.9%	28.4%
Plastics	# 1 PET Deposit Beverage Containers	0.3%	0.1%	0.5%
Plastics	# 1 PET Beverage Containers	0.4%	0.3%	0.5%
Plastics	# 2 HDPE Containers	1.1%	0.8%	1.4%
Plastics	Film/Wrap/Bags	4.7%	3.4%	6.1%
Plastics	Other # 1 PET Containers	0.4%	0.2%	0.6%
Plastics	Other Plastic Containers	0.6%	0.4%	0.8%
Plastics	Other Plastic Products	6.1%	4.9%	7.5%
Total Plastics		13.5%	11.6%	15.6%
Metals	Aluminum Beverage Containers	0.1%	0.0%	0.2%
Metals	Aluminum Deposit Beverage Containers	0.2%	0.1%	0.3%
Metals	Ferrous Food and Beverage Containers	1.0%	0.6%	1.4%
Metals	Other Aluminum Containers	0.1%	0.1%	0.2%
Metals	Other Ferrous Metals	2.1%	1.3%	3.0%
Metals	Other Non-Ferrous Scrap	0.4%	0.3%	0.5%
Total Metals		3.9%	3.1%	4.7%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.0%	0.0%	0.1%
Glass	Clear Glass	1.1%	0.6%	1.7%
Glass	Glass Deposit Containers	0.2%	0.1%	0.4%
Glass	Green Glass	0.1%	0.0%	0.2%
Glass	Other Mixed Cullet	0.4%	0.2%	0.7%
Total Glass		1.8%	1.2%	2.5%
Yard Waste	Pumpkins	0.4%	0.1%	0.8%
Yard Waste	Yard Waste	1.6%	0.6%	3.2%
Total Yard Waste		2.0%	0.8%	3.7%
Food Waste	Food Waste	11.6%	7.6%	16.3%
Total Food Waste		11.6%	7.6%	16.3%
Wood	Non-Treated	2.4%	0.8%	4.8%
Wood	Treated	5.5%	2.3%	10.1%
Total Wood		7.9%	3.3%	14.3%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	3.7%	1.1%	7.6%
Total Demolition / Renovation / Construction Debris		3.7%	1.1%	7.6%

Dubuque Metropolitan Area Solid Waste Agency Landfill - Residential Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.0%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	3.7%	1.9%	6.0%
Durables	Other Durables	4.4%	1.3%	9.3%
Total Durables		8.1%	4.1%	13.2%
Textiles And Leathers	Textiles and Leathers	5.8%	4.1%	7.7%
Total Textiles And Leathers		5.8%	4.1%	7.7%
Diapers	Diapers	4.6%	2.3%	7.6%
Total Diapers		4.6%	2.3%	7.6%
Rubber	Rubber	0.1%	0.1%	0.3%
Total Rubber		0.1%	0.1%	0.3%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.1%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.6%	0.3%	1.0%
HHMS	Other HHM	0.1%	0.0%	0.2%
HHMS	Paints and Solvent	1.2%	0.3%	2.8%
HHMS	Pesticides, Herbicides, Fungicides	0.1%	0.0%	0.2%
Total Household Hazardous Materials		2.0%	0.8%	3.8%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	2.8%	1.8%	4.0%
Total Other Organic		2.8%	1.8%	4.0%
Other Inorganic	Other Inorganic	4.9%	2.1%	8.9%
Total Other Inorganic		4.9%	2.1%	8.9%
Fines/Super Mix	Fines/Super Mix	2.6%	1.8%	3.7%
Total Fines/Super Mix		2.6%	1.8%	3.7%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Dubuque Metropolitan Area Solid Waste Agency Landfill - ICI Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	4.6%	2.7%	7.1%
Paper	High Grade Office	1.5%	0.9%	2.3%
Paper	Magazines	0.8%	0.3%	1.4%
Paper	Mixed Recyclable Paper	5.6%	3.7%	7.8%
Paper	Newsprint	6.0%	1.5%	13.1%
Paper	Non-Recyclable Paper	5.1%	2.3%	8.9%
Paper	OCC and Kraft Bags	16.9%	9.1%	26.5%
Total Paper		40.5%	29.4%	52.0%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.1%	0.3%
Plastics	# 1 PET Beverage Containers	0.2%	0.1%	0.4%
Plastics	# 2 HDPE Containers	0.6%	0.3%	0.9%
Plastics	Film/Wrap/Bags	5.4%	3.6%	7.6%
Plastics	Other # 1 PET Containers	0.1%	0.1%	0.3%
Plastics	Other Plastic Containers	0.2%	0.1%	0.4%
Plastics	Other Plastic Products	6.1%	4.0%	8.6%
Total Plastics		12.8%	9.6%	16.5%
Metals	Aluminum Beverage Containers	0.1%	0.0%	0.1%
Metals	Aluminum Deposit Beverage Containers	0.1%	0.1%	0.3%
Metals	Ferrous Food and Beverage Containers	0.7%	0.3%	1.1%
Metals	Other Aluminum Containers	0.3%	0.1%	0.5%
Metals	Other Ferrous Metals	2.4%	1.1%	4.2%
Metals	Other Non-Ferrous Scrap	0.3%	0.1%	0.5%
Total Metals		3.9%	2.2%	6.0%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.0%	0.0%	0.0%
Glass	Clear Glass	0.5%	0.2%	0.9%
Glass	Glass Deposit Containers	0.3%	0.1%	0.7%
Glass	Green Glass	0.0%	0.0%	0.1%
Glass	Other Mixed Cullet	0.9%	0.3%	1.8%
Total Glass		1.7%	0.7%	3.2%
Yard Waste	Pumpkins	0.0%	0.0%	0.0%
Yard Waste	Yard Waste	0.3%	0.1%	0.5%
Total Yard Waste		0.3%	0.1%	0.5%
Food Waste	Food Waste	13.6%	6.8%	22.1%
Total Food Waste		13.6%	6.8%	22.1%
Wood	Non-Treated	3.6%	1.4%	6.7%
Wood	Treated	2.0%	0.9%	3.5%
Total Wood		5.5%	2.5%	9.5%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	2.9%	1.2%	5.4%
Total Demolition / Renovation / Construction Debris		2.9%	1.2%	5.4%

Dubuque Metropolitan Area Solid Waste Agency Landfill - ICI Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.2%	0.1%	0.5%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	1.6%	0.7%	3.0%
Durables	Other Durables	3.8%	1.4%	7.2%
Total Durables		5.6%	2.5%	10.0%
Textiles And Leathers	Textiles and Leathers	6.9%	3.5%	11.3%
Total Textiles And Leathers		6.9%	3.5%	11.3%
Diapers	Diapers	0.8%	0.3%	1.4%
Total Diapers		0.8%	0.3%	1.4%
Rubber	Rubber	1.6%	0.6%	3.0%
Total Rubber		1.6%	0.6%	3.0%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.1%	0.0%	0.3%
HHMS	Other HHM	0.1%	0.0%	0.1%
HHMS	Paints and Solvent	0.3%	0.1%	0.6%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.5%	0.2%	0.9%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	0.6%	0.3%	1.1%
Total Other Organic		0.6%	0.3%	1.1%
Other Inorganic	Other Inorganic	1.5%	0.7%	2.7%
Total Other Inorganic		1.5%	0.7%	2.7%
Fines/Super Mix	Fines/Super Mix	1.3%	0.7%	2.0%
Total Fines/Super Mix		1.3%	0.7%	2.0%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Dubuque Metropolitan Area Solid Waste Agency Landfill - Mixed Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	5.1%	3.8%	6.7%
Paper	High Grade Office	1.0%	0.6%	1.6%
Paper	Magazines	3.6%	1.9%	5.8%
Paper	Mixed Recyclable Paper	5.2%	3.9%	6.8%
Paper	Newsprint	3.2%	2.0%	4.6%
Paper	Non-Recyclable Paper	4.9%	1.7%	9.6%
Paper	OCC and Kraft Bags	5.3%	3.4%	7.4%
Total Paper		28.3%	23.6%	33.3%
Plastics	# 1 PET Deposit Beverage Containers	0.1%	0.0%	0.2%
Plastics	# 1 PET Beverage Containers	0.4%	0.3%	0.5%
Plastics	# 2 HDPE Containers	1.2%	0.7%	1.8%
Plastics	Film/Wrap/Bags	7.6%	5.2%	10.4%
Plastics	Other # 1 PET Containers	0.2%	0.1%	0.4%
Plastics	Other Plastic Containers	0.2%	0.1%	0.3%
Plastics	Other Plastic Products	7.8%	4.8%	11.4%
Total Plastics		17.5%	12.8%	22.6%
Metals	Aluminum Beverage Containers	0.1%	0.0%	0.3%
Metals	Aluminum Deposit Beverage Containers	0.1%	0.0%	0.1%
Metals	Ferrous Food and Beverage Containers	0.7%	0.4%	0.9%
Metals	Other Aluminum Containers	0.1%	0.0%	0.2%
Metals	Other Ferrous Metals	3.6%	1.6%	6.3%
Metals	Other Non-Ferrous Scrap	0.4%	0.2%	0.7%
Total Metals		4.9%	3.0%	7.4%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.1%	0.0%	0.2%
Glass	Clear Glass	1.8%	0.3%	4.5%
Glass	Glass Deposit Containers	0.4%	0.1%	0.9%
Glass	Green Glass	0.2%	0.0%	0.5%
Glass	Other Mixed Cullet	0.1%	0.0%	0.3%
Total Glass		2.6%	0.8%	5.4%
Yard Waste	Pumpkins	0.0%	0.0%	0.0%
Yard Waste	Yard Waste	1.7%	0.4%	4.1%
Total Yard Waste		1.7%	0.4%	4.1%
Food Waste	Food Waste	10.0%	6.5%	14.3%
Total Food Waste		10.0%	6.5%	14.3%
Wood	Non-Treated	4.6%	1.3%	9.7%
Wood	Treated	9.1%	2.4%	19.5%
Total Wood		13.6%	5.7%	24.2%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	4.4%	1.1%	9.6%
Total Demolition / Renovation / Construction Debris		4.4%	1.1%	9.6%

Dubuque Metropolitan Area Solid Waste Agency Landfill - Mixed Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.0%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	1.9%	0.5%	4.1%
Durables	Other Durables	1.8%	0.2%	5.0%
Total Durables		3.6%	0.7%	8.6%
Textiles And Leathers	Textiles and Leathers	3.5%	1.8%	5.7%
Total Textiles And Leathers		3.5%	1.8%	5.7%
Diapers	Diapers	2.1%	0.8%	4.1%
Total Diapers		2.1%	0.8%	4.1%
Rubber	Rubber	1.7%	0.6%	3.3%
Total Rubber		1.7%	0.6%	3.3%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.4%	0.1%	0.8%
HHMS	Other HHM	0.0%	0.0%	0.0%
HHMS	Paints and Solvent	0.1%	0.0%	0.3%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.5%	0.2%	1.0%
Sharps	Sharps	0.0%	0.0%	0.1%
Total Sharps		0.0%	0.0%	0.1%
Other Organic	Other Organic	1.2%	0.4%	2.5%
Total Other Organic		1.2%	0.4%	2.5%
Other Inorganic	Other Inorganic	1.1%	0.3%	2.4%
Total Other Inorganic		1.1%	0.3%	2.4%
Fines/Super Mix	Fines/Super Mix	3.1%	1.2%	5.9%
Total Fines/Super Mix		3.1%	1.2%	5.9%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Dubuque Metropolitan Area Solid Waste Agency Landfill - MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	5.6%	4.4%	7.0%
Paper	High Grade Office	1.5%	1.1%	1.9%
Paper	Magazines	1.7%	1.2%	2.3%
Paper	Mixed Recyclable Paper	5.8%	4.8%	7.0%
Paper	Newsprint	4.4%	2.4%	6.9%
Paper	Non-Recyclable Paper	3.9%	2.6%	5.5%
Paper	OCC and Kraft Bags	9.6%	6.4%	13.3%
Total Paper		32.5%	27.3%	38.0%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.1%	0.3%
Plastics	# 1 PET Beverage Containers	0.3%	0.2%	0.4%
Plastics	# 2 HDPE Containers	0.9%	0.6%	1.1%
Plastics	Film/Wrap/Bags	5.6%	4.6%	6.8%
Plastics	Other # 1 PET Containers	0.2%	0.2%	0.3%
Plastics	Other Plastic Containers	0.3%	0.3%	0.5%
Plastics	Other Plastic Products	6.5%	5.3%	7.8%
Total Plastics		14.1%	12.2%	16.1%
Metals	Aluminum Beverage Containers	0.1%	0.1%	0.1%
Metals	Aluminum Deposit Beverage Containers	0.1%	0.1%	0.2%
Metals	Ferrous Food and Beverage Containers	0.8%	0.5%	1.0%
Metals	Other Aluminum Containers	0.2%	0.1%	0.3%
Metals	Other Ferrous Metals	2.6%	1.8%	3.5%
Metals	Other Non-Ferrous Scrap	0.3%	0.2%	0.4%
Total Metals		4.1%	3.2%	5.1%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.0%	0.0%	0.1%
Glass	Clear Glass	1.0%	0.6%	1.4%
Glass	Glass Deposit Containers	0.3%	0.2%	0.5%
Glass	Green Glass	0.1%	0.0%	0.2%
Glass	Other Mixed Cullet	0.6%	0.3%	0.9%
Total Glass		2.0%	1.3%	2.8%
Yard Waste	Pumpkins	0.1%	0.1%	0.2%
Yard Waste	Yard Waste	1.0%	0.6%	1.6%
Total Yard Waste		1.2%	0.7%	1.8%
Food Waste	Food Waste	12.1%	8.8%	15.9%
Total Food Waste		12.1%	8.8%	15.9%
Wood	Non-Treated	3.4%	2.0%	5.1%
Wood	Treated	4.7%	2.9%	6.9%
Total Wood		8.1%	5.3%	11.3%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	3.5%	2.1%	5.2%
Total Demolition / Renovation / Construction Debris		3.5%	2.1%	5.2%

Dubuque Metropolitan Area Solid Waste Agency Landfill - MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.1%	0.1%	0.2%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	2.4%	1.5%	3.4%
Durables	Other Durables	3.5%	2.0%	5.6%
Total Durables		6.0%	3.9%	8.6%
Textiles And Leathers	Textiles and Leathers	5.8%	4.1%	7.6%
Total Textiles And Leathers		5.8%	4.1%	7.6%
Diapers	Diapers	2.3%	1.5%	3.3%
Total Diapers		2.3%	1.5%	3.3%
Rubber	Rubber	1.1%	0.7%	1.7%
Total Rubber		1.1%	0.7%	1.7%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.3%	0.2%	0.5%
HHMS	Other HHM	0.1%	0.0%	0.1%
HHMS	Paints and Solvent	0.6%	0.3%	0.9%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.1%
Total Household Hazardous Materials		1.0%	0.6%	1.5%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	1.5%	1.0%	2.0%
Total Other Organic		1.5%	1.0%	2.0%
Other Inorganic	Other Inorganic	2.6%	1.6%	3.8%
Total Other Inorganic		2.6%	1.6%	3.8%
Fines/Super Mix	Fines/Super Mix	2.1%	1.6%	2.8%
Total Fines/Super Mix		2.1%	1.6%	2.8%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Metro Waste Authority Metro Park East Landfill

Metro Waste Authority Metro Park East Landfill - Solid Waste Composition

Material Group	Material	Average Percent Composition
Paper	Compostable Paper	5.04%
Paper	High Grade Office	2.31%
Paper	Magazines	1.51%
Paper	Mixed Recyclable Paper	5.50%
Paper	Newsprint	3.60%
Paper	Non-Recyclable Paper	1.43%
Paper	OCC and Kraft Bags	8.12%
Total Paper		27.51%
Plastics	# 1 PET Deposit Beverage Containers	0.13%
Plastics	# 1 PET Beverage Containers	0.31%
Plastics	# 2 HDPE Containers	0.79%
Plastics	Film/Wrap/Bags	5.35%
Plastics	Other # 1 PET Containers	0.23%
Plastics	Other Plastic Containers	0.28%
Plastics	Other Plastic Products	4.61%
Total Plastics		11.70%
Metals	Aluminum Beverage Containers	0.14%
Metals	Aluminum Deposit Beverage Containers	0.12%
Metals	Ferrous Food and Beverage Containers	0.53%
Metals	Other Aluminum Containers	0.06%
Metals	Other Ferrous Metals	2.26%
Metals	Other Non-Ferrous Scrap	0.42%
Total Metals		3.53%
Glass	Blue Glass	0.03%
Glass	Brown Glass	0.02%
Glass	Clear Glass	0.46%
Glass	Glass Deposit Containers	0.20%
Glass	Green Glass	0.09%
Glass	Other Mixed Cullet	0.31%
Total Glass		1.10%
Yard Waste	Pumpkins	0.00%
Yard Waste	Yard Waste	1.30%
Total Yard Waste		1.30%
Food Waste	Food Waste	7.21%
Total Food Waste		7.21%
Wood	Non-Treated	2.70%
Wood	Treated	3.61%
Total Wood		6.32%
Demolition / Renovation / Construction Debris	C & D Debris	22.47%
Total Demolition / Renovation / Construction Debris		22.47%

Metro Waste Authority Metro Park East Landfill - Solid Waste Composition

Material Group	Material	Average Percent Composition
Durables	Cellphones and Chargers	0.00%
Durables	Central Processing Units/Peripherals	0.02%
Durables	Computer Monitors/TV'S	0.00%
Durables	Electrical and Household Appliances	2.08%
Durables	Other Durables	2.04%
Total Durables		4.13%
Textiles And Leathers	Textiles and Leathers	4.46%
Total Textiles And Leathers		4.46%
Diapers	Diapers	1.73%
Total Diapers		1.73%
Rubber	Rubber	0.31%
Total Rubber		0.31%
HHMS	Automotive Products	0.01%
HHMS	Household Cleaners	0.00%
HHMS	Lead Acid Batteries	0.00%
HHMS	Mercury Containing Products	0.00%
HHMS	Other Batteries	0.09%
HHMS	Other HHM	0.03%
HHMS	Paints and Solvent	0.02%
HHMS	Pesticides, Herbicides, Fungicides	0.01%
Total Household Hazardous Materials		0.16%
Sharps	Sharps	0.00%
Total Sharps		0.00%
Other Organic	Other Organic	1.29%
Total Other Organic		1.29%
Other Inorganic	Other Inorganic	1.64%
Total Other Inorganic		1.64%
Fines/Super Mix	Fines/Super Mix	2.00%
Total Fines/Super Mix		2.00%
Other	Other	0.11%
Total Other		0.11%
Special Waste	Asbestos, ash, contaminated soil	3.02%
Total Special Waste		3.02%
Grand Total		100.00%

Metro Waste Authority Metro Park East Landfill - Residential Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	7.6%	5.2%	10.4%
Paper	High Grade Office	1.5%	0.9%	2.2%
Paper	Magazines	2.5%	1.7%	3.4%
Paper	Mixed Recyclable Paper	7.8%	5.9%	10.0%
Paper	Newsprint	6.7%	4.4%	9.5%
Paper	Non-Recyclable Paper	1.6%	1.1%	2.3%
Paper	OCC and Kraft Bags	4.7%	3.2%	6.6%
Total Paper		32.5%	26.8%	38.6%
Plastics	# 1 PET Deposit Beverage Containers	0.1%	0.1%	0.2%
Plastics	# 1 PET Beverage Containers	0.4%	0.2%	0.6%
Plastics	# 2 HDPE Containers	1.3%	0.8%	1.9%
Plastics	Film/Wrap/Bags	5.3%	3.7%	7.1%
Plastics	Other # 1 PET Containers	0.5%	0.3%	0.7%
Plastics	Other Plastic Containers	0.4%	0.2%	0.6%
Plastics	Other Plastic Products	4.5%	2.8%	6.5%
Total Plastics		12.5%	8.7%	16.9%
Metals	Aluminum Beverage Containers	0.0%	0.0%	0.1%
Metals	Aluminum Deposit Beverage Containers	0.2%	0.1%	0.3%
Metals	Ferrous Food and Beverage Containers	1.1%	0.7%	1.5%
Metals	Other Aluminum Containers	0.1%	0.0%	0.1%
Metals	Other Ferrous Metals	1.8%	0.8%	3.0%
Metals	Other Non-Ferrous Scrap	0.9%	0.5%	1.3%
Total Metals		4.0%	2.5%	5.8%
Glass	Blue Glass	0.1%	0.0%	0.2%
Glass	Brown Glass	0.0%	0.0%	0.1%
Glass	Clear Glass	0.8%	0.4%	1.2%
Glass	Glass Deposit Containers	0.2%	0.1%	0.5%
Glass	Green Glass	0.2%	0.0%	0.3%
Glass	Other Mixed Cullet	0.4%	0.2%	0.7%
Total Glass		1.7%	1.0%	2.4%
Yard Waste	Pumpkins	0.0%	0.0%	0.0%
Yard Waste	Yard Waste	1.9%	0.7%	3.5%
Total Yard Waste		1.9%	0.7%	3.5%
Food Waste	Food Waste	9.8%	6.7%	13.3%
Total Food Waste		9.8%	6.7%	13.3%
Wood	Non-Treated	3.0%	1.1%	5.7%
Wood	Treated	6.2%	2.7%	10.9%
Total Wood		9.2%	4.4%	15.4%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	6.9%	1.9%	14.8%
Total Demolition / Renovation / Construction Debris		6.9%	1.9%	14.8%

Metro Waste Authority Metro Park East Landfill - Residential Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.0%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	2.1%	0.6%	4.5%
Durables	Other Durables	0.7%	0.1%	1.8%
Total Durables		2.8%	1.1%	5.4%
Textiles And Leathers	Textiles and Leathers	5.4%	3.2%	8.3%
Total Textiles And Leathers		5.4%	3.2%	8.3%
Diapers	Diapers	3.6%	2.1%	5.4%
Total Diapers		3.6%	2.1%	5.4%
Rubber	Rubber	0.0%	0.0%	0.1%
Total Rubber		0.0%	0.0%	0.1%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.2%	0.0%	0.3%
HHMS	Other HHM	0.0%	0.0%	0.0%
HHMS	Paints and Solvent	0.1%	0.0%	0.2%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.2%	0.1%	0.5%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	2.1%	1.1%	3.4%
Total Other Organic		2.1%	1.1%	3.4%
Other Inorganic	Other Inorganic	3.4%	1.7%	5.8%
Total Other Inorganic		3.4%	1.7%	5.8%
Fines/Super Mix	Fines/Super Mix	4.0%	2.7%	5.6%
Total Fines/Super Mix		4.0%	2.7%	5.6%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Metro Waste Authority Metro Park East Landfill - ICI Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	5.0%	3.3%	7.2%
Paper	High Grade Office	4.4%	2.5%	6.7%
Paper	Magazines	1.4%	0.8%	2.1%
Paper	Mixed Recyclable Paper	5.8%	4.2%	7.6%
Paper	Newsprint	2.2%	1.4%	3.3%
Paper	Non-Recyclable Paper	2.1%	1.2%	3.2%
Paper	OCC and Kraft Bags	15.1%	10.7%	20.0%
Total Paper		36.0%	28.3%	44.0%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.1%	0.3%
Plastics	# 1 PET Beverage Containers	0.4%	0.2%	0.5%
Plastics	# 2 HDPE Containers	0.8%	0.5%	1.2%
Plastics	Film/Wrap/Bags	7.8%	5.2%	10.9%
Plastics	Other # 1 PET Containers	0.1%	0.1%	0.2%
Plastics	Other Plastic Containers	0.2%	0.1%	0.4%
Plastics	Other Plastic Products	7.1%	4.9%	9.6%
Total Plastics		16.6%	12.3%	21.5%
Metals	Aluminum Beverage Containers	0.1%	0.1%	0.3%
Metals	Aluminum Deposit Beverage Containers	0.1%	0.1%	0.2%
Metals	Ferrous Food and Beverage Containers	0.3%	0.2%	0.5%
Metals	Other Aluminum Containers	0.0%	0.0%	0.0%
Metals	Other Ferrous Metals	3.8%	2.2%	5.9%
Metals	Other Non-Ferrous Scrap	0.4%	0.2%	0.6%
Total Metals		4.8%	3.2%	6.9%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.0%	0.0%	0.1%
Glass	Clear Glass	0.4%	0.2%	0.7%
Glass	Glass Deposit Containers	0.2%	0.1%	0.4%
Glass	Green Glass	0.0%	0.0%	0.1%
Glass	Other Mixed Cullet	0.3%	0.2%	0.5%
Total Glass		1.0%	0.6%	1.5%
Yard Waste	Pumpkins	0.0%	0.0%	0.0%
Yard Waste	Yard Waste	1.0%	0.4%	1.7%
Total Yard Waste		1.0%	0.4%	1.7%
Food Waste	Food Waste	8.7%	5.3%	12.9%
Total Food Waste		8.7%	5.3%	12.9%
Wood	Non-Treated	4.3%	2.5%	6.7%
Wood	Treated	4.3%	2.2%	7.1%
Total Wood		8.6%	5.5%	12.4%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	3.7%	1.5%	6.7%
Total Demolition / Renovation / Construction Debris		3.7%	1.5%	6.7%

Metro Waste Authority Metro Park East Landfill - ICI Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.1%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	3.1%	1.5%	5.4%
Durables	Other Durables	4.7%	2.0%	8.3%
Total Durables		7.8%	4.0%	12.9%
Textiles And Leathers	Textiles and Leathers	6.2%	3.5%	9.8%
Total Textiles And Leathers		6.2%	3.5%	9.8%
Diapers	Diapers	0.8%	0.4%	1.2%
Total Diapers		0.8%	0.4%	1.2%
Rubber	Rubber	0.8%	0.4%	1.3%
Total Rubber		0.8%	0.4%	1.3%
HHMS	Automotive Products	0.0%	0.0%	0.1%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.1%	0.0%	0.2%
HHMS	Other HHM	0.0%	0.0%	0.0%
HHMS	Paints and Solvent	0.0%	0.0%	0.0%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.2%	0.1%	0.3%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	1.2%	0.7%	1.9%
Total Other Organic		1.2%	0.7%	1.9%
Other Inorganic	Other Inorganic	1.0%	0.4%	1.9%
Total Other Inorganic		1.0%	0.4%	1.9%
Fines/Super Mix	Fines/Super Mix	1.3%	0.9%	1.9%
Total Fines/Super Mix		1.3%	0.9%	1.9%
Other	Other	0.3%	0.1%	0.6%
Total Other		0.3%	0.1%	0.6%
Grand Total		100.0%		

Metro Waste Authority Metro Park East Landfill - Mixed Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	8.4%	7.6%	9.3%
Paper	High Grade Office	1.6%	0.7%	3.0%
Paper	Magazines	2.3%	1.4%	3.5%
Paper	Mixed Recyclable Paper	9.8%	7.8%	12.0%
Paper	Newsprint	7.6%	5.7%	9.8%
Paper	Non-Recyclable Paper	1.5%	0.9%	2.2%
Paper	OCC and Kraft Bags	8.6%	2.6%	17.7%
Total Paper		39.8%	31.3%	48.7%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.1%	0.4%
Plastics	# 1 PET Beverage Containers	0.6%	0.3%	1.0%
Plastics	# 2 HDPE Containers	0.9%	0.7%	1.1%
Plastics	Film/Wrap/Bags	7.6%	6.5%	8.7%
Plastics	Other # 1 PET Containers	0.4%	0.2%	0.7%
Plastics	Other Plastic Containers	0.7%	0.4%	1.2%
Plastics	Other Plastic Products	5.4%	3.0%	8.5%
Total Plastics		15.7%	12.9%	18.8%
Metals	Aluminum Beverage Containers	0.7%	0.0%	2.4%
Metals	Aluminum Deposit Beverage Containers	0.2%	0.0%	0.5%
Metals	Ferrous Food and Beverage Containers	0.8%	0.4%	1.3%
Metals	Other Aluminum Containers	0.4%	0.0%	1.4%
Metals	Other Ferrous Metals	2.4%	1.1%	4.1%
Metals	Other Non-Ferrous Scrap	0.3%	0.1%	0.7%
Total Metals		4.8%	2.9%	7.0%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.0%	0.0%	0.0%
Glass	Clear Glass	0.8%	0.2%	1.8%
Glass	Glass Deposit Containers	0.5%	0.0%	2.0%
Glass	Green Glass	0.2%	0.0%	0.9%
Glass	Other Mixed Cullet	0.7%	0.2%	1.5%
Total Glass		2.2%	1.3%	3.3%
Yard Waste	Pumpkins	0.0%	0.0%	0.0%
Yard Waste	Yard Waste	3.9%	0.7%	9.4%
Total Yard Waste		3.9%	0.7%	9.4%
Food Waste	Food Waste	9.4%	6.0%	13.6%
Total Food Waste		9.4%	6.0%	13.6%
Wood	Non-Treated	1.4%	0.5%	2.5%
Wood	Treated	0.9%	0.5%	1.5%
Total Wood		2.3%	1.3%	3.6%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	3.4%	0.5%	8.9%
Total Demolition / Renovation / Construction Debris		3.4%	0.5%	8.9%

Metro Waste Authority Metro Park East Landfill - Mixed Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.0%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	2.4%	0.5%	5.6%
Durables	Other Durables	0.0%	0.0%	0.0%
Total Durables		2.4%	0.5%	5.6%
Textiles And Leathers	Textiles and Leathers	4.3%	2.2%	7.0%
Total Textiles And Leathers		4.3%	2.2%	7.0%
Diapers	Diapers	4.0%	2.8%	5.4%
Total Diapers		4.0%	2.8%	5.4%
Rubber	Rubber	0.0%	0.0%	0.1%
Total Rubber		0.0%	0.0%	0.1%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.1%	0.0%	0.2%
HHMS	Other HHM	0.2%	0.0%	1.0%
HHMS	Paints and Solvent	0.0%	0.0%	0.0%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.3%	0.0%	0.8%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	2.3%	1.2%	3.6%
Total Other Organic		2.3%	1.2%	3.6%
Other Inorganic	Other Inorganic	2.2%	1.1%	3.7%
Total Other Inorganic		2.2%	1.1%	3.7%
Fines/Super Mix	Fines/Super Mix	3.0%	2.5%	3.6%
Total Fines/Super Mix		3.0%	2.5%	3.6%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Metro Waste Authority Metro Park East Landfill - MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	6.4%	5.2%	7.9%
Paper	High Grade Office	2.9%	2.0%	4.1%
Paper	Magazines	1.9%	1.5%	2.4%
Paper	Mixed Recyclable Paper	7.0%	6.0%	8.2%
Paper	Newsprint	4.6%	3.7%	5.7%
Paper	Non-Recyclable Paper	1.8%	1.4%	2.4%
Paper	OCC and Kraft Bags	10.4%	8.0%	13.1%
Total Paper		35.1%	30.7%	39.7%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.1%	0.2%
Plastics	# 1 PET Beverage Containers	0.4%	0.3%	0.5%
Plastics	# 2 HDPE Containers	1.0%	0.8%	1.3%
Plastics	Film/Wrap/Bags	6.8%	5.4%	8.5%
Plastics	Other # 1 PET Containers	0.3%	0.2%	0.4%
Plastics	Other Plastic Containers	0.4%	0.3%	0.5%
Plastics	Other Plastic Products	5.9%	4.6%	7.4%
Total Plastics		14.9%	12.4%	17.8%
Metals	Aluminum Beverage Containers	0.2%	0.1%	0.4%
Metals	Aluminum Deposit Beverage Containers	0.2%	0.1%	0.2%
Metals	Ferrous Food and Beverage Containers	0.7%	0.5%	0.9%
Metals	Other Aluminum Containers	0.1%	0.0%	0.2%
Metals	Other Ferrous Metals	2.9%	2.0%	4.0%
Metals	Other Non-Ferrous Scrap	0.5%	0.4%	0.7%
Total Metals		4.5%	3.5%	5.7%
Glass	Blue Glass	0.0%	0.0%	0.1%
Glass	Brown Glass	0.0%	0.0%	0.1%
Glass	Clear Glass	0.6%	0.4%	0.8%
Glass	Glass Deposit Containers	0.3%	0.2%	0.4%
Glass	Green Glass	0.1%	0.1%	0.2%
Glass	Other Mixed Cullet	0.4%	0.3%	0.6%
Total Glass		1.4%	1.1%	1.8%
Yard Waste	Pumpkins	0.0%	0.0%	0.0%
Yard Waste	Yard Waste	1.7%	1.1%	2.5%
Total Yard Waste		1.7%	1.1%	2.5%
Food Waste	Food Waste	9.2%	7.2%	11.7%
Total Food Waste		9.2%	7.2%	11.7%
Wood	Non-Treated	3.5%	2.3%	5.0%
Wood	Treated	4.6%	3.0%	6.8%
Total Wood		8.1%	5.8%	11.0%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	4.9%	2.8%	8.1%
Total Demolition / Renovation / Construction Debris		4.9%	2.8%	8.1%

Metro Waste Authority Metro Park East Landfill - MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.0%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	2.7%	1.7%	4.1%
Durables	Other Durables	2.6%	1.3%	4.5%
Total Durables		5.3%	3.2%	7.9%
Textiles And Leathers	Textiles and Leathers	5.7%	4.1%	7.7%
Total Textiles And Leathers		5.7%	4.1%	7.7%
Diapers	Diapers	2.2%	1.6%	2.9%
Total Diapers		2.2%	1.6%	2.9%
Rubber	Rubber	0.4%	0.2%	0.7%
Total Rubber		0.4%	0.2%	0.7%
HHMS	Automotive Products	0.0%	0.0%	0.0%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.1%	0.1%	0.2%
HHMS	Other HHM	0.0%	0.0%	0.1%
HHMS	Paints and Solvent	0.0%	0.0%	0.1%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.2%	0.1%	0.3%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	1.6%	1.2%	2.2%
Total Other Organic		1.6%	1.2%	2.2%
Other Inorganic	Other Inorganic	2.1%	1.4%	3.0%
Total Other Inorganic		2.1%	1.4%	3.0%
Fines/Super Mix	Fines/Super Mix	2.6%	2.0%	3.2%
Total Fines/Super Mix		2.6%	2.0%	3.2%
Other	Other	0.1%	0.1%	0.3%
Total Other		0.1%	0.1%	0.3%
Grand Total		100.0%		

Northwest Iowa Area Solid Waste Agency Landfill

Northwest Iowa Area Solid Waste Agency Landfill - Solid Waste Composition

Material Group	Material	Average Percent Composition
Paper	Compostable Paper	5.61%
Paper	High Grade Office	2.87%
Paper	Magazines	3.04%
Paper	Mixed Recyclable Paper	7.59%
Paper	Newsprint	3.30%
Paper	Non-Recyclable Paper	3.04%
Paper	OCC and Kraft Bags	4.69%
Total Paper		30.14%
Plastics	# 1 PET Deposit Beverage Containers	0.20%
Plastics	# 1 PET Beverage Containers	0.49%
Plastics	# 2 HDPE Containers	1.30%
Plastics	Film/Wrap/Bags	4.94%
Plastics	Other # 1 PET Containers	0.30%
Plastics	Other Plastic Containers	0.39%
Plastics	Other Plastic Products	3.30%
Total Plastics		10.91%
Metals	Aluminum Beverage Containers	0.10%
Metals	Aluminum Deposit Beverage Containers	0.26%
Metals	Ferrous Food and Beverage Containers	1.21%
Metals	Other Aluminum Containers	0.16%
Metals	Other Ferrous Metals	1.18%
Metals	Other Non-Ferrous Scrap	0.52%
Total Metals		3.44%
Glass	Blue Glass	0.00%
Glass	Brown Glass	0.08%
Glass	Clear Glass	0.73%
Glass	Glass Deposit Containers	0.31%
Glass	Green Glass	0.02%
Glass	Other Mixed Cullet	0.55%
Total Glass		1.71%
Yard Waste	Pumpkins	0.23%
Yard Waste	Yard Waste	1.22%
Total Yard Waste		1.45%
Food Waste	Food Waste	8.82%
Total Food Waste		8.82%
Wood	Non-Treated	1.20%
Wood	Treated	1.73%
Total Wood		2.93%
Demolition / Renovation / Construction Debris	C & D Debris	22.76%
Total Demolition / Renovation / Construction Debris		22.76%

Northwest Iowa Area Solid Waste Agency Landfill - Solid Waste Composition

Material Group	Material	Average Percent Composition
Durables	Cellphones and Chargers	0.02%
Durables	Central Processing Units/Peripherals	1.05%
Durables	Computer Monitors/TV'S	0.20%
Durables	Electrical and Household Appliances	1.19%
Durables	Other Durables	1.00%
Total Durables		3.45%
Textiles And Leathers	Textiles and Leathers	4.02%
Total Textiles And Leathers		4.02%
Diapers	Diapers	3.14%
Total Diapers		3.14%
Rubber	Rubber	0.33%
Total Rubber		0.33%
HHMS	Automotive Products	0.08%
HHMS	Household Cleaners	0.01%
HHMS	Lead Acid Batteries	0.00%
HHMS	Mercury Containing Products	0.00%
HHMS	Other Batteries	0.38%
HHMS	Other HHM	0.13%
HHMS	Paints and Solvent	0.07%
HHMS	Pesticides, Herbicides, Fungicides	0.00%
Total Household Hazardous Materials		0.66%
Sharps	Sharps	0.00%
Total Sharps		0.00%
Other Organic	Other Organic	1.36%
Total Other Organic		1.36%
Other Inorganic	Other Inorganic	2.06%
Total Other Inorganic		2.06%
Fines/Super Mix	Fines/Super Mix	2.23%
Total Fines/Super Mix		2.23%
Other	Other	0.58%
Total Other		0.58%
Grand Total		100.00%

Northwest Iowa Area Solid Waste Agency Landfill - Residential Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	6.3%	3.9%	9.2%
Paper	High Grade Office	1.8%	0.8%	3.3%
Paper	Magazines	4.8%	2.6%	7.7%
Paper	Mixed Recyclable Paper	8.8%	5.2%	13.2%
Paper	Newsprint	3.7%	2.2%	5.5%
Paper	Non-Recyclable Paper	1.2%	0.9%	1.6%
Paper	OCC and Kraft Bags	2.4%	1.1%	4.2%
Total Paper		29.1%	19.6%	39.6%
Plastics	# 1 PET Deposit Beverage Containers	0.4%	0.3%	0.5%
Plastics	# 1 PET Beverage Containers	0.5%	0.2%	0.8%
Plastics	# 2 HDPE Containers	2.1%	1.1%	3.4%
Plastics	Film/Wrap/Bags	6.1%	4.4%	8.1%
Plastics	Other # 1 PET Containers	0.3%	0.2%	0.6%
Plastics	Other Plastic Containers	0.5%	0.3%	0.7%
Plastics	Other Plastic Products	5.1%	4.5%	5.8%
Total Plastics		15.0%	12.7%	17.5%
Metals	Aluminum Beverage Containers	0.1%	0.0%	0.1%
Metals	Aluminum Deposit Beverage Containers	0.3%	0.1%	0.5%
Metals	Ferrous Food and Beverage Containers	1.9%	1.2%	2.8%
Metals	Other Aluminum Containers	0.2%	0.1%	0.3%
Metals	Other Ferrous Metals	1.4%	0.6%	2.7%
Metals	Other Non-Ferrous Scrap	0.4%	0.2%	0.7%
Total Metals		4.2%	2.9%	5.8%
Glass	Blue Glass	0.0%	0.0%	0.1%
Glass	Brown Glass	0.4%	0.0%	1.4%
Glass	Clear Glass	1.2%	0.5%	2.3%
Glass	Glass Deposit Containers	0.2%	0.0%	0.6%
Glass	Green Glass	0.0%	0.0%	0.1%
Glass	Other Mixed Cullet	0.5%	0.2%	0.9%
Total Glass		2.4%	1.2%	4.0%
Yard Waste	Pumpkins	0.3%	0.0%	1.0%
Yard Waste	Yard Waste	3.5%	0.6%	8.4%
Total Yard Waste		3.8%	0.9%	8.6%
Food Waste	Food Waste	12.4%	5.9%	20.7%
Total Food Waste		12.4%	5.9%	20.7%
Wood	Non-Treated	0.8%	0.1%	2.1%
Wood	Treated	0.6%	0.3%	1.1%
Total Wood		1.4%	0.6%	2.5%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	0.9%	0.2%	2.2%
Total Demolition / Renovation / Construction Debris		0.9%	0.2%	2.2%

Northwest Iowa Area Solid Waste Agency Landfill - Residential Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.0%	0.0%	0.0%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	0.6%	0.2%	1.1%
Durables	Other Durables	3.2%	0.3%	8.8%
Total Durables		3.8%	0.9%	8.4%
Textiles And Leathers	Textiles and Leathers	6.2%	3.2%	10.1%
Total Textiles And Leathers		6.2%	3.2%	10.1%
Diapers	Diapers	6.8%	3.1%	11.7%
Total Diapers		6.8%	3.1%	11.7%
Rubber	Rubber	0.3%	0.0%	0.9%
Total Rubber		0.3%	0.0%	0.9%
HHMS	Automotive Products	0.1%	0.0%	0.3%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.8%	0.3%	1.5%
HHMS	Other HHM	0.0%	0.0%	0.1%
HHMS	Paints and Solvent	0.0%	0.0%	0.0%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.9%	0.3%	1.7%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	2.6%	1.0%	4.9%
Total Other Organic		2.6%	1.0%	4.9%
Other Inorganic	Other Inorganic	7.6%	1.5%	17.9%
Total Other Inorganic		7.6%	1.5%	17.9%
Fines/Super Mix	Fines/Super Mix	2.7%	1.5%	4.2%
Total Fines/Super Mix		2.7%	1.5%	4.2%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Northwest Iowa Area Solid Waste Agency Landfill - ICI Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	6.5%	4.2%	9.3%
Paper	High Grade Office	6.9%	3.2%	12.0%
Paper	Magazines	3.4%	2.0%	5.2%
Paper	Mixed Recyclable Paper	9.6%	6.6%	13.1%
Paper	Newsprint	2.3%	1.3%	3.6%
Paper	Non-Recyclable Paper	6.2%	2.7%	10.9%
Paper	OCC and Kraft Bags	9.8%	6.1%	14.3%
Total Paper		44.8%	34.1%	55.7%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.1%	0.3%
Plastics	# 1 PET Beverage Containers	0.8%	0.4%	1.3%
Plastics	# 2 HDPE Containers	1.2%	0.6%	2.0%
Plastics	Film/Wrap/Bags	7.4%	4.2%	11.3%
Plastics	Other # 1 PET Containers	0.4%	0.2%	0.7%
Plastics	Other Plastic Containers	0.4%	0.2%	0.6%
Plastics	Other Plastic Products	3.8%	2.9%	4.7%
Total Plastics		14.1%	9.9%	18.8%
Metals	Aluminum Beverage Containers	0.1%	0.0%	0.1%
Metals	Aluminum Deposit Beverage Containers	0.2%	0.1%	0.3%
Metals	Ferrous Food and Beverage Containers	1.1%	0.6%	1.7%
Metals	Other Aluminum Containers	0.2%	0.1%	0.3%
Metals	Other Ferrous Metals	1.8%	1.0%	2.8%
Metals	Other Non-Ferrous Scrap	1.1%	0.5%	2.0%
Total Metals		4.4%	2.8%	6.4%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.1%	0.0%	0.1%
Glass	Clear Glass	0.4%	0.1%	0.9%
Glass	Glass Deposit Containers	0.1%	0.0%	0.2%
Glass	Green Glass	0.0%	0.0%	0.0%
Glass	Other Mixed Cullet	0.5%	0.2%	0.9%
Total Glass		1.0%	0.4%	1.8%
Yard Waste	Pumpkins	0.1%	0.0%	0.2%
Yard Waste	Yard Waste	1.1%	0.4%	2.3%
Total Yard Waste		1.2%	0.4%	2.5%
Food Waste	Food Waste	5.7%	3.3%	8.7%
Total Food Waste		5.7%	3.3%	8.7%
Wood	Non-Treated	2.6%	1.0%	4.9%
Wood	Treated	2.3%	0.7%	4.7%
Total Wood		4.9%	2.0%	8.8%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	9.8%	2.7%	20.6%
Total Demolition / Renovation / Construction Debris		9.8%	2.7%	20.6%

Northwest Iowa Area Solid Waste Agency Landfill - ICI Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.0%
Durables	Central Processing Units/Peripherals	0.1%	0.0%	0.2%
Durables	Computer Monitors/TV'S	0.0%	0.0%	0.0%
Durables	Electrical and Household Appliances	1.3%	0.4%	2.7%
Durables	Other Durables	0.0%	0.0%	0.0%
Total Durables		1.4%	0.5%	2.8%
Textiles And Leathers	Textiles and Leathers	2.1%	1.3%	3.1%
Total Textiles And Leathers		2.1%	1.3%	3.1%
Diapers	Diapers	2.6%	1.1%	4.7%
Total Diapers		2.6%	1.1%	4.7%
Rubber	Rubber	0.8%	0.4%	1.3%
Total Rubber		0.8%	0.4%	1.3%
HHMS	Automotive Products	0.1%	0.0%	0.2%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.4%	0.1%	0.8%
HHMS	Other HHM	0.0%	0.0%	0.0%
HHMS	Paints and Solvent	0.1%	0.0%	0.1%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.5%	0.2%	1.0%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	1.4%	0.5%	2.7%
Total Other Organic		1.4%	0.5%	2.7%
Other Inorganic	Other Inorganic	0.7%	0.3%	1.4%
Total Other Inorganic		0.7%	0.3%	1.4%
Fines/Super Mix	Fines/Super Mix	2.3%	1.3%	3.5%
Total Fines/Super Mix		2.3%	1.3%	3.5%
Other	Other	2.4%	0.5%	5.6%
Total Other		2.4%	0.5%	5.6%
Grand Total		100.0%		

Northwest Iowa Area Solid Waste Agency Landfill - Mixed Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	7.4%	6.4%	8.4%
Paper	High Grade Office	2.2%	1.5%	2.9%
Paper	Magazines	3.6%	2.9%	4.4%
Paper	Mixed Recyclable Paper	9.4%	8.4%	10.6%
Paper	Newsprint	5.2%	4.0%	6.6%
Paper	Non-Recyclable Paper	3.2%	1.9%	4.8%
Paper	OCC and Kraft Bags	4.6%	3.4%	6.0%
Total Paper		35.6%	32.7%	38.5%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.3%
Plastics	# 1 PET Beverage Containers	0.5%	0.4%	0.7%
Plastics	# 2 HDPE Containers	1.7%	1.3%	2.2%
Plastics	Film/Wrap/Bags	5.4%	4.7%	6.2%
Plastics	Other # 1 PET Containers	0.4%	0.3%	0.5%
Plastics	Other Plastic Containers	0.5%	0.4%	0.7%
Plastics	Other Plastic Products	3.9%	3.3%	4.6%
Total Plastics		12.7%	11.4%	14.2%
Metals	Aluminum Beverage Containers	0.2%	0.1%	0.3%
Metals	Aluminum Deposit Beverage Containers	0.4%	0.3%	0.5%
Metals	Ferrous Food and Beverage Containers	1.6%	1.3%	2.0%
Metals	Other Aluminum Containers	0.2%	0.1%	0.4%
Metals	Other Ferrous Metals	1.3%	0.9%	1.7%
Metals	Other Non-Ferrous Scrap	0.4%	0.3%	0.6%
Total Metals		4.2%	3.4%	5.0%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.0%	0.0%	0.1%
Glass	Clear Glass	1.1%	0.8%	1.4%
Glass	Glass Deposit Containers	0.6%	0.3%	1.0%
Glass	Green Glass	0.0%	0.0%	0.1%
Glass	Other Mixed Cullet	0.9%	0.5%	1.4%
Total Glass		2.6%	1.9%	3.5%
Yard Waste	Pumpkins	0.4%	0.1%	0.7%
Yard Waste	Yard Waste	1.1%	0.6%	1.8%
Total Yard Waste		1.5%	0.9%	2.4%
Food Waste	Food Waste	13.4%	10.9%	16.0%
Total Food Waste		13.4%	10.9%	16.0%
Wood	Non-Treated	1.1%	0.6%	1.8%
Wood	Treated	2.5%	1.4%	3.9%
Total Wood		3.6%	2.2%	5.3%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	2.6%	1.3%	4.2%
Total Demolition / Renovation / Construction Debris		2.6%	1.3%	4.2%

Northwest Iowa Area Solid Waste Agency Landfill - Mixed Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.1%
Durables	Central Processing Units/Peripherals	2.4%	0.7%	5.0%
Durables	Computer Monitors/TV'S	0.4%	0.2%	0.9%
Durables	Electrical and Household Appliances	1.8%	0.9%	3.0%
Durables	Other Durables	1.3%	0.5%	2.6%
Total Durables		6.0%	3.0%	9.9%
Textiles And Leathers	Textiles and Leathers	6.2%	4.4%	8.3%
Total Textiles And Leathers		6.2%	4.4%	8.3%
Diapers	Diapers	3.7%	2.8%	4.8%
Total Diapers		3.7%	2.8%	4.8%
Rubber	Rubber	0.2%	0.1%	0.4%
Total Rubber		0.2%	0.1%	0.4%
HHMS	Automotive Products	0.1%	0.0%	0.2%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.4%	0.2%	0.7%
HHMS	Other HHM	0.3%	0.1%	0.5%
HHMS	Paints and Solvent	0.1%	0.0%	0.2%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		1.0%	0.6%	1.5%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	1.6%	1.1%	2.2%
Total Other Organic		1.6%	1.1%	2.2%
Other Inorganic	Other Inorganic	2.1%	1.2%	3.1%
Total Other Inorganic		2.1%	1.2%	3.1%
Fines/Super Mix	Fines/Super Mix	3.0%	2.6%	3.5%
Total Fines/Super Mix		3.0%	2.6%	3.5%
Other	Other	0.0%	0.0%	0.0%
Total Other		0.0%	0.0%	0.0%
Grand Total		100.0%		

Northwest Iowa Area Solid Waste Agency Landfill - MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Paper	Compostable Paper	6.9%	6.0%	8.0%
Paper	High Grade Office	3.5%	2.5%	4.7%
Paper	Magazines	3.8%	3.1%	4.5%
Paper	Mixed Recyclable Paper	9.4%	8.2%	10.6%
Paper	Newsprint	4.1%	3.3%	5.0%
Paper	Non-Recyclable Paper	3.8%	2.6%	5.1%
Paper	OCC and Kraft Bags	5.8%	4.5%	7.3%
Total Paper		37.3%	33.4%	41.2%
Plastics	# 1 PET Deposit Beverage Containers	0.2%	0.2%	0.3%
Plastics	# 1 PET Beverage Containers	0.6%	0.5%	0.7%
Plastics	# 2 HDPE Containers	1.6%	1.3%	2.0%
Plastics	Film/Wrap/Bags	6.1%	5.1%	7.2%
Plastics	Other # 1 PET Containers	0.4%	0.3%	0.5%
Plastics	Other Plastic Containers	0.5%	0.4%	0.6%
Plastics	Other Plastic Products	4.1%	3.6%	4.5%
Total Plastics		13.5%	12.0%	15.0%
Metals	Aluminum Beverage Containers	0.1%	0.1%	0.2%
Metals	Aluminum Deposit Beverage Containers	0.3%	0.2%	0.4%
Metals	Ferrous Food and Beverage Containers	1.5%	1.2%	1.8%
Metals	Other Aluminum Containers	0.2%	0.1%	0.3%
Metals	Other Ferrous Metals	1.5%	1.1%	1.8%
Metals	Other Non-Ferrous Scrap	0.6%	0.5%	0.9%
Total Metals		4.3%	3.6%	4.9%
Glass	Blue Glass	0.0%	0.0%	0.0%
Glass	Brown Glass	0.1%	0.1%	0.2%
Glass	Clear Glass	0.9%	0.7%	1.2%
Glass	Glass Deposit Containers	0.4%	0.2%	0.6%
Glass	Green Glass	0.0%	0.0%	0.0%
Glass	Other Mixed Cullet	0.7%	0.5%	1.0%
Total Glass		2.1%	1.6%	2.7%
Yard Waste	Pumpkins	0.3%	0.1%	0.5%
Yard Waste	Yard Waste	1.5%	1.0%	2.2%
Total Yard Waste		1.8%	1.2%	2.6%
Food Waste	Food Waste	10.9%	8.9%	13.1%
Total Food Waste		10.9%	8.9%	13.1%
Wood	Non-Treated	1.5%	0.9%	2.2%
Wood	Treated	2.1%	1.4%	3.0%
Total Wood		3.6%	2.5%	4.9%
Demolition / Renovation / Construction Debris	C & D Debris (Excluding Wood)	4.5%	2.6%	6.8%
Total Demolition / Renovation / Construction Debris		4.5%	2.6%	6.8%

Northwest Iowa Area Solid Waste Agency Landfill - MSW Composition

Material Group	Material	Average Percent Comp.	Lower Bound	Upper Bound
Durables	Cellphones and Chargers	0.0%	0.0%	0.1%
Durables	Central Processing Units/Peripherals	1.3%	0.6%	2.3%
Durables	Computer Monitors/TV'S	0.2%	0.1%	0.4%
Durables	Electrical and Household Appliances	1.5%	0.9%	2.1%
Durables	Other Durables	1.2%	0.6%	2.0%
Total Durables		4.3%	2.7%	6.2%
Textiles And Leathers	Textiles and Leathers	5.0%	3.8%	6.2%
Total Textiles And Leathers		5.0%	3.8%	6.2%
Diapers	Diapers	3.9%	3.0%	4.9%
Total Diapers		3.9%	3.0%	4.9%
Rubber	Rubber	0.4%	0.3%	0.6%
Total Rubber		0.4%	0.3%	0.6%
HHMS	Automotive Products	0.1%	0.1%	0.2%
HHMS	Household Cleaners	0.0%	0.0%	0.0%
HHMS	Lead Acid Batteries	0.0%	0.0%	0.0%
HHMS	Mercury Containing Products	0.0%	0.0%	0.0%
HHMS	Other Batteries	0.5%	0.3%	0.7%
HHMS	Other HHM	0.2%	0.1%	0.3%
HHMS	Paints and Solvent	0.1%	0.0%	0.1%
HHMS	Pesticides, Herbicides, Fungicides	0.0%	0.0%	0.0%
Total Household Hazardous Materials		0.8%	0.6%	1.1%
Sharps	Sharps	0.0%	0.0%	0.0%
Total Sharps		0.0%	0.0%	0.0%
Other Organic	Other Organic	1.7%	1.2%	2.2%
Total Other Organic		1.7%	1.2%	2.2%
Other Inorganic	Other Inorganic	2.5%	1.6%	3.6%
Total Other Inorganic		2.5%	1.6%	3.6%
Fines/Super Mix	Fines/Super Mix	2.8%	2.3%	3.2%
Total Fines/Super Mix		2.8%	2.3%	3.2%
Other	Other	0.7%	0.3%	1.2%
Total Other		0.7%	0.3%	1.2%
Grand Total		100.0%		