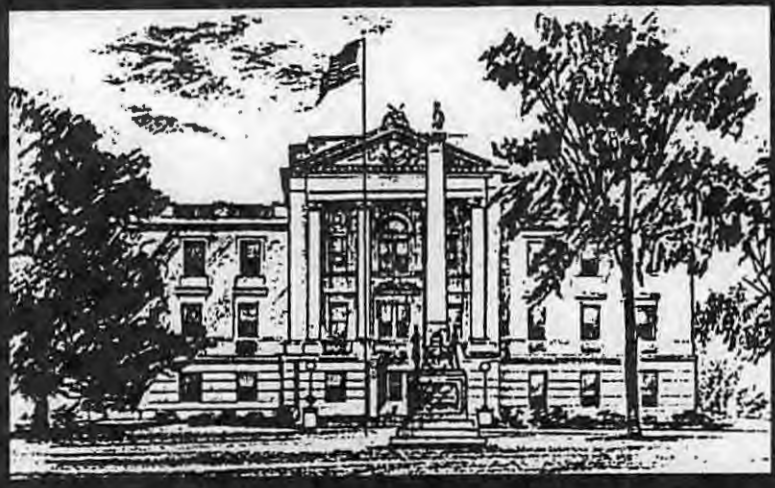
DEKALB



COUNTY

Waste Management Needs Assessment

prepared by

PATRICK
ENGINEERING INC.

MAY, 1994

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DEFINITION OF TERMS

The following terms have been defined by the Illinois Environmental Protection Act (Act), the Solid Waste Planning and Recycling Act (SWPRA) of Illinois and the Illinois Compiled Statutes. In cases where legal definitions are unavailable, definitions commonly used within the solid waste industry have been utilized.

Commercial Waste.

"Commercial Waste" is defined to include waste from the following business sectors: trade, finance, insurance, real estate and services. Typically, waste from multi-family residences and trailer parks is also considered to be commercial waste.

Commercial/Institutional Waste.

"Commercial/Institutional Waste" refers to waste originating from commercial and institutional establishments.

Commercial/Institutional/Industrial Waste.

"Commercial/Institutional/Industrial Waste" refers to waste originating from commercial, institutional and industrial establishments.

Composting. As defined by Section 3.70 of the Act:

"Composting" means the biological process by which microorganisms decompose the organic fraction of waste, producing compost.

Clean Construction and Demolition Debris. As defined by Section 3.78 of the Act:

"Clean Construction or Demolition Debris" means broken concrete without protruding metal bars, bricks, rock, stone, reclaimed asphalt pavement or uncontaminated dirt or sand generated from construction or demolition activities.

Discard.

"Discard" refers to the placement of something in the waste handling system. The item may then be recovered, processed or disposed of.

Disposal.

"Disposal" refers to the placement of waste in a landfill or in a facility intended for the treatment or processing of the waste (e.g. municipal incinerator, RDF facility, mixed waste composting facility).

General Household Waste.

"General Household Waste" refers to waste typically generated from single family households. Single family households would include structures containing up to four attached units. Waste from structures which contain five or more attached units is generally collected in dumpsters on commercial collection routes, therefore, this waste is typically considered to be commercial waste.

Hazardous Waste. As defined by Section 3.15 of the Act:

"Hazardous Waste" means a waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating reversible, illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed, and which has been identified, by characteristics or listing, as hazardous pursuant to Section 3001 of the Resource Conservation and Recovery Act of 1976, P.L. 94-580, or pursuant to Board regulations.

Incineration by the Homeowner.

"Incineration by the Homeowner" refers to burning, conducted privately by homeowners, to dispose of waste materials. Incineration by the homeowner is often accomplished in a burn barrel or on open space, such as ditches or fire pits.

Industrial Process Waste. As defined by Section 3.17 of the Act:

"Industrial Process Waste" means any liquid, solid, semi-solid, or gaseous waste generated as a direct or indirect result of the manufacture of a product or the performance of a service. Any such waste that would pose a present or potential threat to human health or to the environment or with inherent properties which make the disposal of such waste in a landfill difficult to manage by normal means is an industrial process waste. "Industrial Process Waste" includes but is not limited to spent pickling liquors, cutting oils, chemical catalysts, distillation bottoms, etching acids, equipment cleanings, paint sludge, incinerator ashes (including but not limited to ash resulting from the incineration of potentially infectious medical waste), core sands, metallic dust sweepings, asbestos dust, hospital pathological wastes and off-specification, contaminated or recalled wholesale and retail products. Specifically excluded are uncontaminated packaging materials, uncontaminated machinery components, general household waste, landscape waste and construction and demolition debris.

Industrial Waste.

"Industrial Waste" is defined as all non-hazardous, non-special solid wastes generated in the following business sectors: mining, construction, manufacturing, transportation, communication and utilities. Since construction and demolition debris is classified separately, it is typically excluded from industrial waste.

Industrial Office and Lunchroom Waste.

"Industrial Office and Lunchroom Waste" refers to the portion of industrial waste that is generated in the office and lunchroom.

Institutional Waste.

"Institutional Waste" is defined as waste which originates from public institutions such as schools, hospitals, nursing homes, governmental departments, jails, libraries, etc.

Landscape Waste. As defined by Section 3.20 of the Act:

"Landscape Waste" means all accumulations of grass or shrubbery cuttings, leaves, tree limbs, and other materials accumulated as the result of the care of lawns, shrubbery, vines and trees.

Municipal Waste. As defined by Section 3.21 of the Act:

"Municipal Waste" means garbage, general household, institutional and commercial waste, industrial lunchroom or office waste, landscape waste, and construction and demolition debris.

The Illinois Environmental Protection Agency interprets the definition used by the Solid Waste Planning and Recycling Act as follows:

Municipal waste does include:

a. abandoned or discarded household or commercial appliances, including white goods.
b. abandoned or waste parts from motor vehicles normally removed as a part of regular maintenance such as tires and batteries.
c. construction and demolition debris from buildings and roads.
d. wastes collected in a household hazardous waste collection.
f. landscape waste.

Municipal waste does not include:

a. special waste.
b. hazardous waste.
c. earth materials moved or removed during demolition or construction.
d. scrap metal from industrial operations such as machining, lathe work, tool and die operations, etc.
e. abandoned or scrap motor vehicles.
f. surplus or donated clothing given to charitable organizations, such as Goodwill or Salvation Army.
g. surplus or donated food contributed for human consumption.
h. usable or reusable commodities donated to charitable organizations, such as Goodwill or Salvation Army.

Municipal Waste Recycling Rate. As interpreted by the Illinois Environmental Protection Agency:

"Municipal Waste Recycling Rate" is the percentage derived by dividing the weight of the generated municipal waste that is being recycled (or planned for recycling) by the weight of the municipal waste generated, (or expected to be generated) within the area of concern during the same year.

The weight of municipal waste being recycled is: the weighed amount of municipal waste received (or planned for receipt) for recycling, minus the weighed amount of material remaining after processing that is not recyclable.

Non-Hazardous Waste.

"Non-Hazardous Waste" refers to the combination of municipal waste and industrial waste excluding special waste.

Open Burning. As defined by Section 3.23 of the Act:

"Open Burning" is the combustion of any matter in the open or in an open dump.

Open Dumping. As defined by Section 3.24 of the Act:

"Open Dumping" means the consolidation of refuse from one or more sources at a disposal site that does not fulfill the requirements of a sanitary landfill.

Recycling, Reclamation or Reuse. As defined by Section 3.30 of the Act and the SWPRA:

> "Recycling, Reclamation or Reuse" means a method, technique or process designed to remove any contaminant from waste so as to render the waste reusable, or any process by which materials that would otherwise be disposed of or discarded are collected, separated or processed and returned to the economic mainstream in the form of raw materials or products.
>
> The Illinois Environmental Protection Agency (IEPA) interprets the definition as follows:
>
> Recycling does include:
>
> a. composting operations where the waste, once composted, is returned to the economic mainstream or replaces other raw materials for fertilizer, soil conditioner or mulch.
> b. applying landscape or other municipal waste directly to agricultural land at agronomic rates.
> c. landscape waste that is collected, separated or processed and returned to the economic mainstream in the form of raw materials or products.
> d. shredding operations where the waste is returned to the economic mainstream or replaces other raw materials as soil conditioner, mulch or erosion control.
> e. re-using construction or demolition debris for building construction purposes or re-use as road surface materials.
> f. using waste for commercial feed for such things as mink farms, swine operations or fish production.
> g. processing waste at a rendering facility for return to the economic mainstream.
> h. processing municipal waste, particularly metal appliances, for metal recovery.

Recycling Center. As defined by Section 3.81 of the Act:

> "Recycling Center" means a site or a facility that accepts only segregated, nonhazardous, non-special, homogeneous, non-putrescible materials, such as dry paper, glass, cans or plastics, for subsequent use in the secondary materials market.

Refuse.

> "Refuse" refers to garbage and general household, commercial and institutional, industrial lunchroom or office waste and construction/demolition waste which is discarded for final disposal.

Sanitary Landfill. As defined by Section 3.41 of the Act:

> "Sanitary Landfill" means a facility permitted by the Agency for the disposal of waste on land meeting the requirements of the Resource Conservation and Recovery Act, P.L. 94-580, and regulations thereunder, and without creating nuisances or hazards to public health or safety, by confining the refuse to the smallest practical volume and covering it with a layer of earth at the conclusion of each day's operations, or by such other methods and intervals as the Board may provide by regulation.

Special Waste. As defined by Section 3.45 of the Act:

> "Special Waste" means any industrial process waste, pollution control waste or hazardous waste, except as may be determined pursuant to Section 22.9 of this Act. Special waste also means any potentially infectious medical waste.

Total Waste.

> "Total Waste" is defined as discarded general household, commercial/institutional, industrial, construction/demolition and sewage sludge wastes.

Toxicity Reduction.

> "Toxicity Reduction" is the process of reducing or eliminating the amount of toxic constituents in products or materials entering the waste stream.

Transfer Station. As defined by Section 3.83 of the Act:

> "Transfer Station" means a site or facility that accepts waste for temporary storage or consolidation and further transfer to a waste disposal, treatment, or storage facility. "Transfer station" includes a site where waste is transferred from (1) a rail carrier to a motor vehicle or water carrier; (2) a water carrier to a rail carrier or motor vehicle; (3) a motor vehicle to a rail carrier, water carrier or motor vehicle; (4) a rail carrier to a rail carrier, if the waste is removed from a rail car; or (5) a water carrier to a water carrier, if the waste is removed from a vessel.

Volume Reduction.

> "Volume Reduction" is defined as the processing of waste so as to decrease the amount of space the materials occupy. Volume reduction may be accomplished through mechanical means (compaction or shredding); thermal means (incineration); and biological means (composting).

Waste Reduction.

> "Waste Reduction" refers to decreasing the quantity or type of materials and/or products that must be disposed through methods including source reduction, reuse, toxicity reduction, volume reduction and recycling.

Waste Stream.

"Waste Stream" is defined as the waste generated by a specific segment as it moves from origin to disposal. A waste stream may include the total flow of general household, commercial/institutional, industrial and construction/demolition waste that must be recycled, incinerated or landfilled; or a segment thereof, such as the general household waste stream or recyclable waste stream.

White Goods. As defined by Section 22.28 of the Act:

"White Goods" shall include all discarded refrigerators, ranges, water heaters, freezers, air conditioners, humidifiers, and other similar domestic and large commercial appliances.

ABBREVIATIONS AND ACRONYMS

CII	=	commercial, institutional and industrial
C/D	=	construction and demolition waste
ENR	=	Illinois Department of Energy and Natural Resources
GH	=	general household
HHW	=	household hazardous waste
IBOB	=	Illinois Bureau of the Budget
IDES	=	Illinois Department of Employment Security
IEPA	=	Illinois Environmental Protection Agency
LSW	=	landscape waste
LBS/CY	=	pounds per cubic yard
MW	=	municipal waste
NIU	=	Northern Illinois University
P.A.	=	Public Act
PCD	=	pounds per capita per day
PED	=	pounds per employee per day
PEI	=	Patrick Engineering Inc.
SIC	=	Standard Industrial Classification
SWPRA	=	Solid Waste Planning and Recycling Act
TPD	=	tons per day
TPY	=	tons per year
TW	=	total waste
WMX/DCD	=	Waste Management Inc.-West/DeKalb County Disposal

EXECUTIVE SUMMARY

This Needs Assessment study was performed to provide the necessary data to develop an integrated waste management plan and to satisfy the requirements of the Solid Waste Planning and Recycling Act (415 ILCS 15/1 et. seq.) for DeKalb County. This report was funded in part with a grant from the Illinois Environmental Protection Agency (IEPA). The report provides a significant amount of detail about the demographics of DeKalb County, the county's municipal waste and total waste generation, the composition of the county's waste and the county's waste management system, including estimates of the amount of waste landfilled, incinerated, recycled, and composted in the county. Projections of future waste quantities based on demographic factors are developed for the period of 1993 through 2015. In addition, solid waste issues which may affect these projections are also discussed.

Sources of Data. The primary sources of information for this report include county officials and documents; municipal officials and documents; waste hauling companies; local and regional landfill operators; recycling centers; landscape waste facilities; local commercial, institutional and industrial establishments; a general household waste weigh field study; Northern Illinois University representatives; construction and demolition contractors; landscaping companies; on-site incineration facility operators; the Illinois Environmental Protection Agency; and various published sources.

Demographics. DeKalb County, located in north-central Illinois, is bordered by Boone and McHenry Counties on the north, Kane and Kendall Counties on the east, LaSalle County on the south and Ogle and Lee Counties on the west. The county encompasses a total of 636 square miles. A total of 13 municipalities are located within the County. The largest municipalities include DeKalb, Sycamore, Sandwich and Genoa.

According to the Bureau of the Census, 77,932 people resided in DeKalb County in 1990. Of the estimated 27,351 total households in DeKalb County (reported by the Bureau of the Census), approximately 74 percent are single family (households including 1 detached unit and 1- 4 attached units), 21 percent are multi-family (households including 5+ attached units)

and 5 percent are manufactured home developments (mobile homes). The Illinois Bureau of the Budget (IBOB) projects that DeKalb County will experience a 0.16 percent average annual growth in its population. The DeKalb County Planning Department and the DeKalb County Economic Development Corporation, however, predict higher rates of population growth.

The Illinois Department of Employment Security (IDES) estimates that total employment in DeKalb County during 1990 was 31,976. Employment within the county is oriented towards government (particularly education and health services), manufacturing, trade, services and agriculture. Most of the commercial and industrial areas within the County are located in DeKalb, Sycamore, Sandwich and Genoa. Northern Illinois University is the largest employer in DeKalb County and also represents a significant fraction of the county's population. IDES projects that DeKalb County will experience a 0.4 percent annual growth in its employment.

Waste Generation. General household waste generation for 1993 is estimated to be 43,060 tons or 3.1 pounds per capita per day (PCD). Commercial/Institutional waste generation for 1993 is estimated to be 25,236 tons or 1.8 PCD. Industrial office and lunchroom waste generation for 1993 is estimated to be 3,040 tons or 0.2 PCD. Industrial waste generation for 1993 is estimated to be 29,635 tons or 2.1 PCD. Construction/Demolition waste generation for 1993 is estimated to be 13,972 tons or 1.0 PCD.

Municipal waste generation for 1993, which is composed of general household waste (50%), commercial/institutional waste (30%), industrial office and lunchroom waste (4%) and construction/demolition waste (16%), is estimated to be 85,308 tons or 6.1 PCD. Total waste generation for 1993, which is composed of general household waste (38%), commercial/institutional waste (23%), industrial waste (26%) and construction/ demolition waste (12%), is estimated to be 111,903 tons or 8.0 PCD.

Waste Composition. It is estimated that the composition by weight of DeKalb County's municipal waste includes paper (41%), other wastes, such as textiles, rubber, wood and others (14%), food (13%), landscape waste (12%), plastic (9%), metals (6%) and glass (5%). It is estimated that the composition by volume of DeKalb County's municipal waste includes paper

(47%), plastic (22%), metals (10%), landscape waste (7%), food waste (6%), other wastes (6%), and glass (2%).

Waste Management System. Seven private haulers provide collection services in DeKalb County, including BFI - Rockford, Community Disposal, Illinois Valley Recycling, Marengo Disposal, Monarch Disposal, Tri-County Disposal (WMX) and Waste Management-West (WMX). Waste Management - West, which recently acquired DeKalb County Disposal (DCD), hauls the majority of the county's waste.

Nine municipalities contract for waste collection services. Collection services are privately arranged for in four municipalities, as well in the unincorporated areas of townships. Collection arrangements for commercial, institutional and industrial establishments are privately arranged as well. The average hauling distance required to dispose of general household waste throughout the county is estimated to be 14 miles.

Landfilling is the primary means of disposal for waste generated within DeKalb County. An estimated 58,977 tons of municipal waste is expected to be landfilled in DeKalb County during 1993. It is estimated that the breakdown of the municipal waste landfilled consists of general household waste (49%), commercial/institutional waste (23%), industrial office and lunchroom waste (5%) and construction/demolition waste (24%). An estimated 72,582 tons of total waste is expected to be landfilled in DeKalb County during 1993. It is estimated that the breakdown of the total waste landfilled consists of general household waste (40%), commercial/institutional waste (19%), industrial waste (23%) and construction/demolition waste (19%).

The DeKalb County Landfill, located in Cortland, primarily serves DeKalb County. The landfill, which is operated by Waste Management, is expected to accept approximately 79,208 tons of waste during 1993 based on 1992 levels. This estimate is a sum of 77,379 tons of non-hazardous waste and 1,829 tons of special waste. Approximately 6,223 tons, or 8 percent, of the non-hazardous waste disposed in the DeKalb County landfill was imported into the landfill during 1992 from counties bordering DeKalb County, including Kane, Kendall, LaSalle, Lee,

McHenry and Ogle Counties. The importation of non-hazardous waste, however, has been declining. Only six percent was imported into the DeKalb County Landfill during 1993. Landfill records indicate that quantities of waste landfilled (in both tonnage and cubic yardage) are highest in the spring and summer months and lowest in the fall and winter months.

Landfills used to dispose of DeKalb County's non-hazardous waste include the DeKalb County Landfill (98%), Rochelle Municipal Landfill (1%), States Land Improvement (<1%), Winnebago Reclamation Landfill (<1%), Woodland Landfill (<1%), Peru Municipal Landfill (<1%), Davis Junction Landfill (<1%), and Morris Community Landfill (<1%). Overall, it is estimated that 1,426 tons, or 2 percent, of DeKalb County's non-hazardous waste will be exported from DeKalb County to out-of-county landfills during 1993.

The DeKalb County Landfill reports that disposal capacity will be depleted in 19.6 years, or by 2012. Landfill facilities located within proximity to DeKalb County have reported remaining capacity of 1 to 51 years based on current intake volumes.

A total of 83 tons of municipal waste, or 121 tons of total waste, is expected to be incinerated in DeKalb County during 1993. Of this amount, an estimated 83 tons will occur from commercial/institutional establishments with on-site incinerators and 38 tons will occur from industrial establishments with on-site incinerators.

DeKalb County is expected to recycle 26,814 tons of municipal waste, or 31,190 tons of total waste in 1993. Of the general household materials recycled, an estimated 4,734 tons originate from curbside recycling collections, 1,960 tons originates from drop-off recycling centers, and an estimated 8,172 tons of landscape waste generated by DeKalb County residents will be composted during 1993. Of the commercial, institutional and industrial (CII) materials recycled, an estimated 404 tons of landscape waste will be composted, 7,863 tons originate from CII recycling conducted by haulers, 466 tons originate from commercial/institutional establishments arranging their own markets, 228 tons originate from industrial establishments arranging their own markets (municipal waste recycling), 12,952 tons originate from industrial establishments (non-municipal waste recycling), 1,248 originate from the City of DeKalb's multi-

family drop-boxes and 1,739 tons originate from Northern Illinois University's (NIU's) internal recycling program.

Households in eleven of the thirteen municipalities and various unincorporated areas within the County have curbside collection services. In other words, 65 percent of single family households in Dekalb County have curbside recycling programs available to them. Participation rates in these programs range from 75 - 95 percent. Drop-off recycling sites serving the DeKalb County area include the City of DeKalb's multi-family drop-boxes, the DeKalb County Landfill Drop-Box, DeKalb Iron & Metal, the NIU Student Association Recycling Center, R & T Recycling, and the WMX/DCD Processing Center.

Many commercial, institutional and industrial (CII) establishments in DeKalb County have incorporated recycling programs within their operations. In most cases, the establishments either arrange their own markets or contract recycling collection services. NIU and Kishwaukee College have implemented internal recycling programs. The University Recycling Act will require both universities to develop comprehensive waste management plans and to reduce their waste stream by 40 percent by January, 2000.

Up until 1993, DeKalb County Disposal (DCD), recently acquired by Waste Management - West, operated a landscape waste facility where a majority of DeKalb County's landscape waste was composted. Since 1993, the DeKalb County Landscape Waste Facility, located at the landfill in Cortland, provides DeKalb County, as well as many other communities in Northern Illinois, with an outlet for composting landscape waste. The facility, operated by Waste Management, is projected to accept over 61,000 cubic yards, or approximately 26,180 tons at the facility in 1993, although a majority of this material is generated from areas located outside of DeKalb County.

Of DeKalb County's municipal waste discarded in 1993, it is estimated that 69 percent will be landfilled, less than 1 percent will be incinerated, 31 percent will be recycled (21% recycled + 10% composted or land applied). Of DeKalb County's total waste discarded in 1993, it is estimated that 65 percent will be landfilled, less than 1 percent will be incinerated,

28 percent will be recycled and 8 percent will be composted. The municipal waste recycling rate (including quantities of municipal waste recycled and composted) of DeKalb County in 1993, estimated to be 31 percent, surpasses the State's municipal waste recycling goals. The Solid Waste Planning and Recycling Act requires the County to develop and implement a recycling plan designed to achieve a recycling rate of 15 percent within three years and 25 percent within five years of implementation.

Projected Waste Generation. Municipal waste generation is expected to increase within 0.09 and 1.6 percent per year between 1993 and 2015 based on demographic factors alone. Total waste generation is expected to increase within 0.08 and 1.6 percent per year between 1993 and 2015 based on demographic factors alone.

Waste Management Issues. Factors which may impact the future generation and management of DeKalb County's waste include changes in the waste management system, regional disposal capacity, special collection/disposal requirements, waste reduction initiatives, increased waste generation per capita, demographic shifts, educational programming and reporting methodology. These issues should be examined further in Phase II planning and in the 5-year planning updates.

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CHAPTER ONE
INTRODUCTION

The environmentally sound and cost effective management of waste has become an increasingly important issue to municipalities, the general public and private industry during the last decade. In order to balance and meet the public needs of safety, conservation, convenience, and low cost, public officials must carefully plan the management of their region's waste. For this reason, state legislators enacted the Illinois Solid Waste Planning and Recycling Act (Illinois Revised Statutes). The Act requires each county in Illinois to develop a waste management plan that will meet the county's waste management needs for the next 20 years. Under the provisions of the Act, DeKalb County and all other Illinois counties are required to design a program to recycle 15 percent of their municipal waste within three years and 25 percent within five years of plan implementation.

This report, which has been funded by DeKalb County and the Illinois Environmental Protection Agency, represents the completion of the first major step in the formation of DeKalb County's waste management plan. It was prepared to meet the first two provisions of Solid Waste Planning and Recycling Act required for the development of a waste management plan:

> (1) A description of the origin, content, and weight or volume of municipal waste currently generated within the county's boundaries, and the origin of waste, content and weight or volume of municipal waste that will be generated within the county's boundaries during the next twenty years, including an assessment of the primary variables affecting this estimate and the extent to which they can reasonably be expected to occur.
>
> (2) A description of the facilities where municipal waste is currently being processed or disposed of and the remaining available permitted capacity of such facilities.

This report describes the current status of waste generation and waste management in DeKalb County and discusses changes that may occur during the next twenty years. The chief objective of this report is to provide the information necessary to develop a plan that effectively meets DeKalb County's future waste management needs. A second objective of this report is to meet the State's statutory and regulatory requirements for the Phase I Waste Needs Assessment. A final objective is to provide a sound foundation for monitoring progress toward

recycling goals and for updating the plan at five-year intervals (as required by State legislation). The remainder of this chapter discusses briefly how this report is organized.

Chapter 2 describes the methodologies used to collect and assemble waste management information for the county. Information sources included county officials and documents; municipal/township officials and documents; waste hauling companies; local and regional landfill operators; recycling centers; landscape waste facilities; local commercial, institutional and industrial establishments; a general household waste weigh field study; Northern Illinois University staff; construction and demolition contractors; landscaping companies; on-site incineration facility operators; the Illinois Environmental Protection Agency; and various published sources. More detailed descriptions of these information sources are provided in the Appendices.

Chapter 3 presents a County overview, population trends, employment trends, and other demographic trends for DeKalb County for 1990 to 2015. The projections for population and employment in this chapter are used in Chapter 7 to predict future waste generation.

Chapter 4 describes the quantity and origin of the municipal waste and total waste currently generated in DeKalb County. Separate assessments are made of the general household, commercial/institutional, industrial office and lunchroom, industrial and construction/demolition waste streams.

Chapter 5 describes the composition of DeKalb County's waste by weight and by volume. Knowledge of waste composition may be useful in the determination of the quantity of recyclable, re-usable and compostable materials in the waste stream.

Chapter 6 describes the existing waste management system in DeKalb County and assesses the current levels of landfilling, incineration, recycling, and composting. Waste collection, transportation, and disposal within DeKalb County are fully characterized in this chapter.

Chapter 7 presents projections of the quantities of waste that will be generated in DeKalb County from 1993 to 2015.

Chapter 8 presents issues which may impact the future management of waste in DeKalb County. Topics discussed include changes in the waste management system, regional disposal capacity, special collection/disposal requirements, waste reduction initiatives, changes in waste generation per capita, demographic shifts, educational programming and reporting methodology.

Chapter 9 summarizes the major findings of this report.

Appendix A presents a listing of contacts and references which contributed to the development of this report.

Appendix B presents various telephone, mail and interview surveys used to collect data for this study.

Appendix C presents more detailed information on the hauler/landfill data.

Appendix D presents more detailed information on the establishment surveys.

Appendix E presents more detailed information on the waste weigh field studies.

Appendix F presents the responses to questions and comments made at the public meeting on the draft report.

Appendix G presents the correspondence with the IEPA.

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CHAPTER TWO
METHODS OF DATA COLLECTION

Determining the quantities, composition and management mechanisms of waste generated within a region is difficult because historical records are generally unavailable and because waste is a heterogeneous material, varying in quantity, composition and management from area to area and from business to business. Thus, it is important to contact a variety of independent sources to verify the information gathered from any particular source. The primary goal of data collection in this study was to obtain as much local data as possible. Where historical records were not available, actual field data was collected on general household waste by means of a field weighing study. This chapter reviews: 1) the sources of waste information; 2) the methods used to collect data from these sources; 3) the assumptions used in analyzing the collected data; and 4) the strengths and limitations of this research.

The report required the cooperative efforts of DeKalb County, municipalities, waste haulers, landfills, recycling centers and services, landscape waste facilities, waste generators, recyclers and several other information sources. Staff from DeKalb County, municipalities, haulers and the landfill operator were particularly helpful with the provision of essential information. Appendix A contains a listing of contacts which contributed to the development of this report.

Sources of Information. The primary sources of information for this report were:

- County officials and documents
- Municipal officials and documents
- Waste hauling companies
- Local and regional landfill operators
- Recycling centers and services
- Landscape waste facilities
- Local commercial, institutional and industrial establishments
- A field study in which general household waste from a large sample of households was weighed
- Northern Illinois University staff

- Construction and demolition contractors
- Landscaping companies
- On-site incineration facility operators
- Illinois Environmental Protection Agency
- Various published sources, including demographic summaries and other recent waste studies conducted in rural counties in Illinois

Methods of Data Collection. The methods used to gather information from each of these sources are described below.

County Officials. Several conversations were held with DeKalb County staff. DeKalb County staff assisted in the coordination of mailings conducted to gather data. Staff also provided information concerning the waste background of the county and previous planning activities. Information collected included:

- Historical solid waste background
- Demographic overview
- Ordinances enacted in the County
- Educational activities

Documents used to develop this assessment included:

- DeKalb County 1991 Comprehensive Plan
- 1990 DeKalb County Population Characteristics
- 1992 DeKalb County Industrial Directory
- DeKalb County Economic Development Corp. Quarterly Report
- Annual Report 1992 DeKalb County Planning Department
- DeKalb County Economic Profile

Municipal Officials. Surveys were mailed to all municipalities located in DeKalb County. In addition, the municipalities were interviewed over the telephone to follow up on the written surveys. A personal interview was also conducted with representatives of the City of DeKalb's

Public Works Department. Information gathered in the surveys can be categorized into the following:

- Refuse Collection
- Curbside Recycling
- Landscape Waste Collection
- Recycling Center
- Multi-Family Recycling
- Commercial Recycling
- Government Recycling
- Household Hazardous Waste
- Management of White Goods
- Reporting
- Solid Waste Educational/Informational Activities
- Solid Waste Codes and Ordinances
- Local Solid Waste Issues

Twelve of the thirteen mail surveys were returned. All thirteen municipalities were contacted by telephone. Refer to Appendix B for a copy of the municipal survey.

Haulers. All haulers known to be operating within DeKalb County were sent a survey by mail or FAX. Each hauler was also contacted by telephone to follow up on the written surveys. A personal interview was conducted with DeKalb County Disposal (DCD), which was previously the largest hauler in DeKalb County and was recently been acquired by Waste Management - West. The mail surveys and telephone interviews requested information concerning:

- Refuse Collection
- Importation/Exportation of Refuse
- Residential Curbside Recycling Services
- Landscape Waste Collection Services
- Multi-Family/Mobile Home Collection Services
- Commercial/Institutional/ Industrial Collection Services
- Local Solid Waste Issues

Surveys were completed for 4 of the 8 known private haulers serving DeKalb County (there are only seven now that WMX has acquired DCD). All haulers were contacted by phone to gather more detailed information. Haulers were not always able to provide certain information. In some cases, accurate records were unavailable. In other cases, haulers were unwilling to disclose information considered to be proprietary. Refer to Appendix B for a copy of the hauler survey. A more detailed description regarding the analysis of hauler data may be found in Appendix C.

In-County Landfill Operator. A personal interview was conducted with the landfill located within DeKalb County. Additional information was also gathered through subsequent phone conversations.

- Waste Types Accepted
- Unit of Measure and Conversions
- Tipping Fees
- Quantity of Waste Disposed
- Origin of Waste
- Remaining Disposal Capacity
- Expected Closure Date
- Out-of-County Restrictions
- Seasonal Fluctuation of Waste

A more detailed description regarding the analysis of landfill data may be found in Appendix C.

Out-of-County Landfill Operators. Information was collected from landfills located outside of the county through telephone conversations or through published sources including the IEPA 1992 Available Disposal Capacity Report and the Solid Waste Digest.

- Owner and Operator
- Distance from DeKalb
- Tipping Fees
- Remaining Disposal Capacity
- Expected Closure Date
- Out-of-County Restrictions

Sixteen regional landfills were also contacted by telephone.

Recycling Centers and Services. Recycling programs throughout DeKalb County were contacted by telephone. Information requested included:

- The Quantity of Materials Collected
- The Types of Materials Collected
- The Geographic Origin of Materials Collected
- Recycling Markets Utilized
- A Description of the Facility
- The Educational Activities Performed to Support Recycling

Two recycling centers were sent surveys. Other recycling centers were contacted by telephone for information. Gathering information on recycled quantities from recycling centers, however, is difficult for several reasons. First, recyclers generally have only an approximate idea at best of how much of the material they collect is "residential" or "commercial" and how much of the material is generated within County borders. Second, private operators may be reluctant to provide information considered to be proprietary.

Landscape Waste Facilities. The IEPA-permitted DeKalb County Landscape Waste Facility operated by Waste Management was contacted to determine the amount of landscape waste that is collected at the site and the quantity that originates from DeKalb County. DeKalb County Disposal (recently acquired by Waste Management - West) was also contacted regarding quantities of landscape waste collected at its landscape waste facility, which was in operation until 1993.

Local Commercial, Institutional and Industrial Establishments. Surveys were also mailed to commercial and industrial businesses in the County to obtain waste data. Businesses in the county were identified through a list provided by the County Planning Department and the DeKalb Chamber of Commerce. Surveys requested information including:

- Number of Employees
- Type of Business
- The Quantity of Refuse Collected and Materials Recycled
- The Composition of Refuse Collected and Materials Recycled

A total of 370 surveys were sent to DeKalb County commercial/institutional establishments and 129 responses were received (34 percent response rate). A total of 77 surveys were sent to industrial establishments in DeKalb County and 26 responses were received (34 percent response rate). CII establishments which employed over 100 employees were also contacted by phone to gather and/or verify waste management information. The data obtained was used to estimate CII refuse and recycling quantities, and to determine the breakdown of commercial, institutional and industrial waste. A copy of the establishment surveys is in Appendix B. Appendix D provides an analysis of the survey responses.

Field Study of General Household Waste. Data on general household waste generation was also collected through a field study in which residential refuse, recyclables and landscape waste set-outs were weighed at the curb during sampling periods in August and November 1993. Waste was weighed from more than 630 homes in DeKalb and Sycamore using a platform scale and a pick-up truck. The study was coordinated with local haulers so that an adequate sample size could be obtained, and so that the study would not slow down the haulers on their collection route. Appendix E describes the methodology of this research in greater detail.

Northern Illinois University. Representatives from NIU were interviewed by telephone to obtain waste data from the facilities. Surveys requested information including:

- Number of Employees
- Number of Students
- Description of Waste Collection and Recycling Programs
- The Quantity of Refuse Collected and Materials Recycled

Construction & Demolition Contractors. Three local construction contractors and three excavation companies were contacted to determine the quantity of construction/demolition debris generated and the forms of disposal utilized for this waste.

Landscaping Companies. Three landscaping companies were contacted to determine the amount of landscape waste that is generated and the method of management.

Incineration Facility Operators. The Illinois Environmental Protection Agency has indicated that 21 on-site incinerators for 14 firms located within DeKalb County are currently permitted to operate. Each firm was contacted to investigate the status of the incinerator and the level of incineration occurring. Only three firms, however, were found to be operating their incinerators and disposing of municipal waste. These firms were requested to report the quantity and composition of waste incinerated.

Illinois Environmental Protection Agency. Several resources of the IEPA were used whenever possible, including lists of permitted waste management facilities and reports such as the Available Disposal Capacity Report.

Published Sources. Published sources used in this report include other waste studies in Illinois and the U.S. This report also uses population estimates from the Illinois Bureau of Budget, the Bureau of the Census, Illinois Department of Employment Security, Woods and Poole Inc. and other sources of demographic information.

Assumptions Used in Analysis. Some of the waste data that was collected during this investigation was on a cubic yard basis. Information sources were asked to estimate waste density whenever possible, but in cases when they could not, it was necessary to develop conversion factors to transform the volume data to weight data. Based on information obtained from haulers in DeKalb County and in other counties, the following waste densities were judged to be representative of the waste collected in the County:

Waste in Packer Trucks	: 800 pounds/cubic yard
Waste in Roll-off Containers	: 250 pounds/cubic yard
Waste in Commercial Compaction Containers	: 450 pounds/cubic yard

These conversion factors were used to convert cubic yards to pounds whenever the survey respondent did not indicate a conversion factor.

Strengths and Limitations of This Research. The research conducted for this report was comprehensive. Information was collected from multiple sources in order to obtain as complete and as reliable a picture of waste generation and waste management in the County as possible. In some cases, information from separate sources was not in complete agreement, but the conclusions of this report are well-founded and represent the best available information at this time.

It should be noted that the data collected for this project and for other needs assessment projects in Illinois has some limitations. First, the uncertainty of the demographic estimates and forecasts makes the waste generation estimates and forecasts less certain. This is unavoidable, but the problem may be more evident for DeKalb County than for some other counties, since demographic and employment estimation for relatively small populations may be less accurate than for larger populations (on a percentage basis).

A second limitation of this research is that the information provided by recyclers, hauling companies, and other sources is sometimes based on experience rather than on records. Nonetheless, the estimates of hauling companies and recycling operations are usually the best information available. Although there has been little reason for records to have been kept in the past, record keeping has become increasingly important to the planning and evaluation of programs.

A third limitation of this research is the uncertainty of the conversion factors for weight and volume. The Waste Planning and Recycling Act requires that the County develop a waste management plan to recycle 25 percent of the municipal waste stream by **weight**. Consequently,

the information presented in this report is in units of weight even though some of the data, including disposal data, was originally obtained in units of volume. The accuracy of the final estimates depends in part on the accuracy of the conversion factors (see previous section entitled Assumptions Used in Analysis).

In general, the data presented in this report is based on numerous reliable sources or actual field data. The various factors that may influence waste quantities and composition, as discussed in Chapter 8, should be kept in mind, however, in developing an efficient waste management system for DeKalb County. The required five year updates to the DeKalb County Waste Management Plan will provide an opportunity to regularly assess the impact of any changes in the waste management system.

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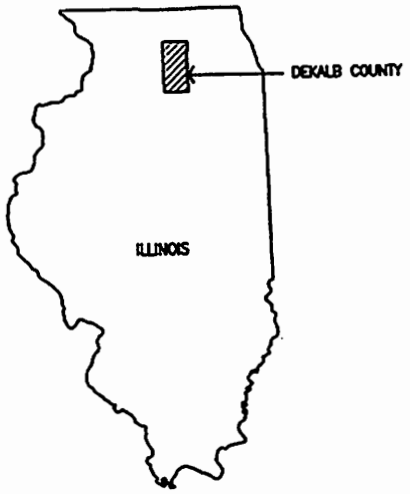
CHAPTER THREE
DEMOGRAPHICS

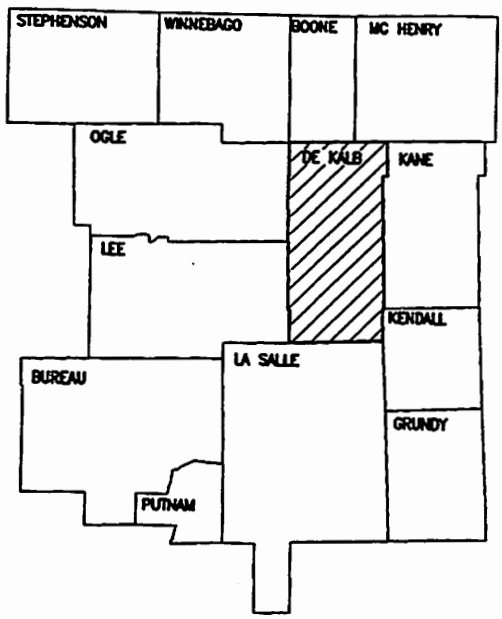
Knowledge of the demographic make-up of an area makes it possible to assess trends in waste generation and predict the quantity and origin of municipal waste generated in that area. In addition, demographic data is necessary to design the operational components of the waste management system. This chapter presents current demographic statistics for DeKalb County and the trends expected to occur during 1995 through 2015, including population, employment and other demographic statistics.

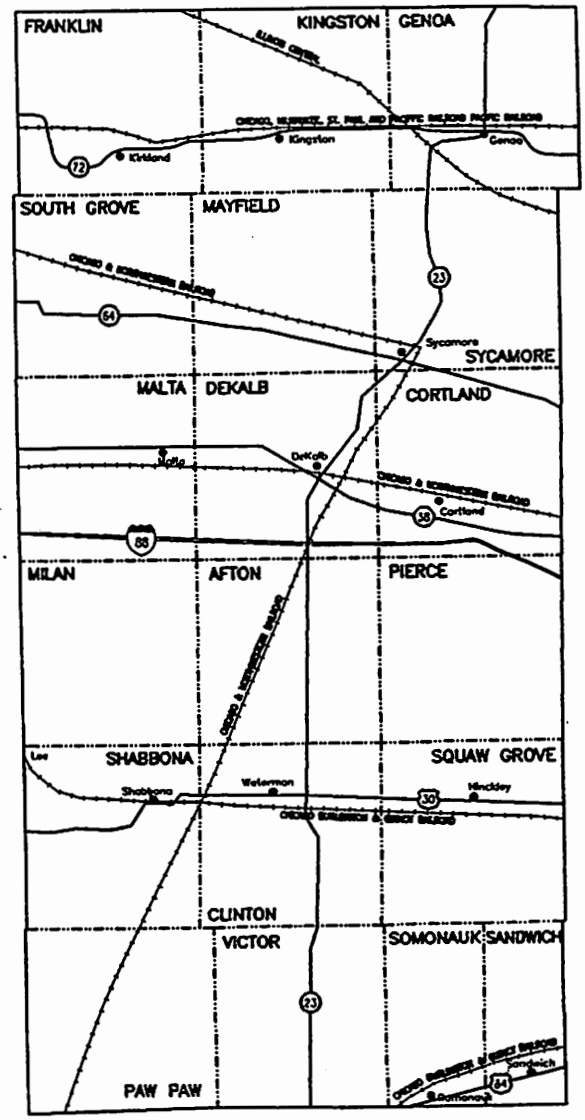
Overview. DeKalb County, located in north-central Illinois, is bordered by Boone and McHenry Counties on the north, Kane and Kendall Counties on the east, LaSalle County on the south and Ogle and Lee Counties on the west. DeKalb County is located on the western edge of the Chicago metropolitan region and the southeastern edge of the Rockford urban area. The eastern border of DeKalb County is located approximately 50 miles from Lake Michigan. The Fox Valley region is 20 miles to the east of the DeKalb-Kane County line. Effective January 1993, DeKalb County became designated by the U.S. Office of Management and Budget as part of the Chicago Primary Metropolitan Statistical Area. The size and layout of the County is rectangular with the north/south dimension 36 miles long and the east/west dimension 18 miles wide. The County encompasses a total of 636 square miles. A map of the DeKalb County area is provided in Figure 3-1.

DeKalb County is served by the regional transportation network which connects Rockford, Chicago and southeastern Wisconsin. DeKalb County has access to Interstate Highway 88; U.S. Highways 30 and 34; and State Highways 72, 64, 38, 30 and 23. Several railroads, including the Illinois Central, the Chicago Milwaukee St. Paul and Pacific, the Chicago and Northwestern, and the Chicago Burlington and Quincy railways also pass through areas within DeKalb County.

DEKALB COUNTY MAP







KEY

- ACCESS HIGHWAYS
- PRINCIPAL HIGHWAYS
- ROADS
- RAILROAD
- FRANKLIN — TOWNSHIPS
- MUNICIPALITIES

PATRICK ENGINEERING INC.

FIGURE 3-1

According to the Bureau of the Census, 77,932 people resided in DeKalb County in 1990. Table 3-1 overviews the municipalities located within DeKalb County and the municipal populations of 1990. As shown in the table, approximately 79 percent of County's population reside in the incorporated areas of the County. A total of 13 municipalities are located within DeKalb County. The City of DeKalb, the City of Sycamore, the City of Sandwich and the City of Genoa are the largest municipalities within the County. The City of Sycamore, located near the center of the County, is the County seat. The remaining 21 percent of the population resides in the unincorporated areas of DeKalb County's 19 townships.

TABLE 3-1. DEKALB COUNTY MUNICIPAL POPULATIONS

	1990 Population: Housing Units	1990 Population: Group Quarters	1990 Population: Total
Cortland	963		963
DeKalb	25,606	9,319	34,925
Genoa	3,083		3,083
Hinckley	1,682		1,682
Kirkland	1,011		1,011
Kingston	534	28	562
Lee**	143		143
Malta	865		865
Maple Park**	4		4
Sandwich**	5,359	207	5,566
Shabbona	818	79	897
Somonauk**	1,031		1,031
Sycamore	9,593	115	9,708
Waterman	1,074		1,074
Incorporated Subtotal	51,766	9,748	61,514
Unincorporated Subtotal	15,955	463	16,418
DeKalb County Total	67,721	10,211	77,932

Note: ** Partially located outside of DeKalb County.

Source: Bureau of the Census, 1990.

DeKalb County is primarily rural. According to the Planning Department, approximately 90 percent of the acreage in DeKalb County has been developed for agricultural use. Residential development has been increasing and represents the second most common use of land within the County. In terms of density, the State of Illinois averages 105 people per square mile, while DeKalb County averages 123 people per square mile. As shown in Table 3-2, the population is significantly more dense within incorporated areas of DeKalb County as compared to the unincorporated areas of the County.

TABLE 3-2. DEKALB COUNTY POPULATION DENSITY - 1990

	Square Miles	Population	Persons/SQM[1]	Households[2]	Households/SQM
Incorporated DeKalb County	22	61,514	2,783	20,719	938
Unincorporated DeKalb County	612	16,418	27	5,694	9
Total DeKalb County	634	77,932	123	26,413	42

Notes: 1. SQM means square miles.
2. Households include occupied households only.

Source: Bureau of the Census, 1990.

Table 3-3 presents data on the type of residential developments in DeKalb County. Of the total households in DeKalb County, approximately 74 percent are single family (households including 1 detached unit and 1-4 attached units), 21 percent are multi-family (households including 5+ attached units) and 5 percent are manufactured home developments (mobile homes.) Several single family housing developments which exist within unincorporated DeKalb County include Charter Grove, Clare, Elva, Esmond, Fairdale, Five Points, McGirr, New Lebanon, Rollo and Shabonna Grove.

TABLE 3-3. DEKALB COUNTY HOUSING UNITS[1] - 1990

	Single Family Housing Units[2]		Multi-Family Housing Units[3]		Other Housing Units[4]		Total Housing Units[5]	Occupied Housing[6]	Vacancy Rate[7]
	#	%	#	%	#	%	#		
Cortland	338	92%	0	0%	28	8%	366	353	4%
DeKalb	6,493	59%	4,198	38%	224	2%	10,915	10,557	3%
Genoa	1,018	83%	90	7%	118	10%	1,226	1,191	3%
Hinckley	599	93%	34	5%	8	1%	641	621	3%
Kirkland	331	79%	0	0%	88	21%	419	405	3%
Kingston	181	98%	0	0%	4	2%	185	181	2%
Lee	46	96%	0	0%	2	4%	48	44	8%
Malta	300	88%	32	9%	7	2%	339	328	3%
Maple Park	2	100%	0	0%	0	0%	2	2	0%
Sandwich	1,863	86%	135	6%	158	7%	2,156	2,098	3%
Shabbona	308	92%	18	5%	8	2%	334	322	4%
Somonauk	378	95%	10	3%	10	3%	398	379	5%
Sycamore	3,176	81%	469	12%	290	7%	3,935	3,831	3%
Waterman	358	86%	37	9%	22	5%	417	407	2%
Incorp. Subtotal	15,391	72%	5,023	23%	967	5%	21,381	20,719	3%
Unincorp. Subtotal	4,954	83%	709	12%	307	5%	5,970	5,694	5%
DeKalb County Total	20,345	74%	5,732	21%	1,274	5%	27,351	26,413	3%

Notes:
1. Housing Units may include unoccupied units.
2. Single-Family Households include 1 detached units and 1- 4 attached units.
3. Multi-Family Households include 5+ attached units.
4. Other includes mobile homes, trailer, and others.
5. Total Households may include unoccupied units.
6. Occupied Households includes all occupied households.
7. Vacancy Rate is the rate of unoccupied units per housing units.

Source: Bureau of the Census, 1990.

Employment within the County is oriented towards government (particularly education and health services), manufacturing, trade, services and agriculture. Most of the commercial and industrial areas within the County are located in DeKalb and Sycamore, Sandwich and Genoa. Northern Illinois University is the largest employer in DeKalb County and also represents a significant fraction of the County's population. Large private employers located within the County include G.T.E., DeKalb Genetics Corporation, Ideal Industries, CTS Knights, Inc., General Electric Co., Duplex Products, Inc., Barber-Greene Co. and AG Communications Systems Corp. Other large non-industrial employers include the DeKalb Community School District, DeKalb County and Kiskwaukee Hospital.

Population Trends. In the past ninety years, the population of DeKalb County has more than doubled, as shown in Table 3-4. In the past ten years, however, population growth in DeKalb County has tapered off. Despite this, the DeKalb County Comprehensive Plan states that DeKalb County is in a region where growth is occurring and that past trends may not be able to predict increases in population and development associated with growth pressures from the Chicago area. The influence and degree of impact associated with rapid growth in DeKalb County may be a result of factors generated outside of the immediate boundaries of the County, such as more affordable housing compared to eastern counties, a willingness for residents to commute to work outside of DeKalb County and increased employment opportunities for DeKalb residents located near DeKalb County. Furthermore, the DeKalb County Planning Department expects population to rise in both incorporated and unincorporated areas of the County based on residential building permits. It should be noted that according to the Bureau of the Census, DeKalb County fared much better than the state as a whole in terms of population growth. DeKalb County was the eighth largest population gainer of the twenty-two counties showing gains.

Table 3-5 lists population projections for DeKalb County for the period 1990 - 2015. Population projections for DeKalb County were obtained from three different sources: 1) the Illinois Bureau of the Budget (IBOB); 2) Woods and Poole Economics; and 3) the DeKalb County Economic Development Corporation (EDC).

TABLE 3-4. HISTORY OF DEKALB POPULATION AND PERCENT CHANGE		
	Population	Percent Change Over 10 Years
1900	31,756	----
1910	33,457	0.5%
1920	31,339	-0.7%
1930	32,644	0.4%
1940	34,388	0.5%
1950	40,781	1.7%
1960	51,714	2.4%
1970	71,654	3.3%
1980	74,624	0.4%
1990	74,100	-0.1%
Source: DeKalb County Comprehensive Plan, 1991.		

TABLE 3-5. DEKALB COUNTY POPULATION PROJECTIONS (1990-2015)[1]			
	IBOB	W&P	EDC
1990	76,735	78,050	77,932
1995	76,390	78,290	84,577
2005	77,899	79,220	95,949
2015	79,737	79,860	113,150
Average Annual Percentage of Change	0.16%	0.09%	1.8%

Notes:
1. These estimates were interpolated or extrapolated from the official estimates of the sources.
2. The average annual growth rate during 1995-2000 was used to calculate projections to 2015.
3. These estimates assume population growth of 1.5% per year to 2000, then 2% per year to 2015.

Sources: Illinois Bureau of the Budget (IBOB), 1990. Woods & Poole (W&P), 1991. DeKalb County Economic Development Corporation, 1993.

As indicated in Table 3-5 and Figure 3-2, the three sources vary in the rate of growth for DeKalb County's population during the period of 1990 through 2015. IBOB estimates that the total DeKalb County population in 1990 was 76,735. With an average annual growth rate of 0.15 percent, the population is estimated to be 79,737 in the year 2015. Woods and Poole Inc. estimates that the total DeKalb County population in 1990 was 78,050. With an average annual growth rate of 0.09 percent, the population is estimated to be 79,860 in the year 2015. DeKalb County EDC estimates that the total DeKalb County population in 1990 was 77,932. With an average annual growth rate of 1.8 percent, the population is estimated to be 113,150 in the year 2015. The disparity in these projections reflects the different forecasting procedures that the organizations use. At this time, it is difficult to judge which organization's forecasting procedure is more accurate. Each forecast will be utilized to predict future waste quantities in Chapter 7. It is recommended that the level of population growth be reassessed during the five year updates.

Employment Trends. According to Woods and Poole, nearly 5 percent of the total employment in DeKalb County is related to farming. For the purposes of this report, however, only non-agricultural employment figures are used since waste from farms is typically handled through residential collections and general household waste estimates are developed on a per capita basis versus a per employee basis.

DeKalb County employment projections were developed utilizing the following sources: 1.) Illinois Department of Employment Security (IDES) employment projections; 2.) Woods and Poole Inc.employment projections; and 3) DeKalb County Economic Development Corporation (EDC) employment projections. IDES data, as shown in Table 3-6, estimates that total employment in 1990 was 31,976. With an average annual growth rate of 0.4 percent projected by IDES, employment is estimated to be 35,171 in the year 2015. As shown in Table 3-7, Woods and Poole estimated that total employment in 1990 was 37,450. With an average annual growth rate of less than 0.1 percent, employment is estimated to be 37,860 in the year 2015. As shown in Table 3-8, EDC estimated that total employment in 1990 was 31,976. With an average annual growth rate of 1.4 percent, employment is estimated to be 43,383 in the year

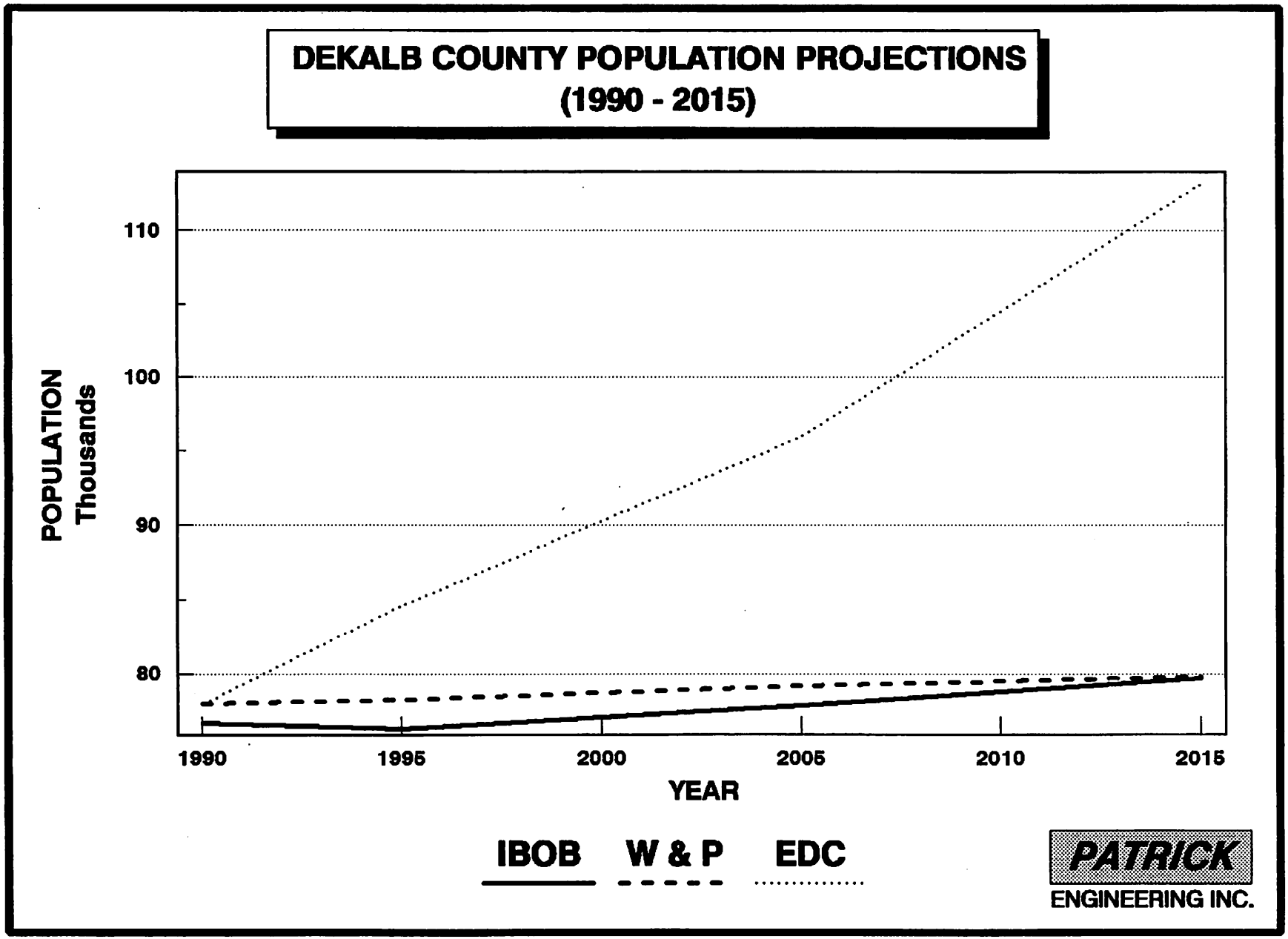

DEKALB COUNTY POPULATION PROJECTIONS
(1990 - 2015)
POPULATION
Thousands
110
100
90
80
1990
1995
2000
2005
2010
2015
YEAR
IBOB
W & P
EDC
PATRICK
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FIGURE 3-2

2015. It should be noted that since municipal waste does not include agricultural waste, farming and agricultural employment is not included within the employment figures which will be used to project municipal waste quantities.

TABLE 3-6. DEKALB COUNTY NON-AGRICULTURAL EMPLOYMENT PROJECTIONS (1990-2015): ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY[1]

	1990	1995	2005	2015	Avg. Annual Rate of Change
Mining	26	27	29	31	0.7%
Construction	900	933	1,022	1,118	0.9%
Manufacturing	6,700	6,678	6,623	6,569	-0.1%
TCU[2]	925	933	953	973	0.2%
Trade	6,625	6,854	7,460	8,120	0.8%
FIRE[2]	850	855	867	879	0.1%
Services	4,700	4,798	5,052	5,319	0.5%
Government[3]	11,250	11,397	11,774	12,162	0.3%
Total	31,976	32,475	33,780	35,171	0.4%

Notes:
1. These estimates were interpolated or extrapolated from the official estimates of the sources.
2. TCU stands for transportation, communications and utilities. FIRE stands for finance, insurance and real estate.
3. Government includes employment in educational services, including public educational services.

Source: Illinois Department of Employment Security, 1988 and 1993.

As indicated in the tables and Figure 3-3, the sources have differing views of current and future levels of employment in DeKalb County. This disparity may be partially explained by the use of different definitions and measurement techniques by each forecasting group. In addition to different definitions, the estimates from the sources vary widely because of the inherent difficulty of making demographic estimates for a relatively small population. Demographic estimation for small populations is generally regarded as less accurate than for larger populations (on a percentage basis). All three employment estimates will be utilized to project future waste quantities in Chapter 7.

TABLE 3-7. DEKALB COUNTY NON-AGRICULTURAL EMPLOYMENT PROJECTIONS (1990-2015): WOODS AND POOLE[1]

	1990	1995	2005	2015	Avg. Annual Rate of Change
Mining	40	40	40	40	0.0%
Construction	1,480	1,440	1,380	1,250	-0.7%
Manufacturing	6,960	6,620	5,930	5,310	-1.1%
TCU [2]	1,140	1,090	1,020	940	-0.8%
Trade	7,160	6,870	6,550	5,830	-0.8%
FIRE [2]	1,490	1,330	1,130	980	-1.7%
Services	7,950	9,140	11,370	13,630	2.2%
Government[3]	11,230	11,220	10,930	9,880	-0.5%
Total	37,450	37,750	38,350	37,860	-0.1%

Notes:
1. These estimates were interpolated or extrapolated from the official estimates of the source.
2. TCU stands for transportation, communications and utilities. FIRE stands for finance, insurance and real estate.
3. Government includes all federal, state and local public institutions, including public education services.

Source: Woods and Poole, 1991.

TABLE 3-8. DEKALB COUNTY NON-AGRICULTURE EMPLOYMENT PROJECTIONS (1990-20150: DEKALB COUNTY ECONOMIC DEVELOPMENT CORPORATION[1]

	1990	1995	2005	2015	Avg. Annual Rate of Change
Mining	26	27	30	33	1.0%
Construction	900	990	1,170	1,350	2.0%
Manufacturing	6,700	6,800	7,000	7,150	0.3%
TCU[2]	925	962	1,036	1,100	0.8%
Trade	6,625	7,552	9,408	11,250	2.8%
FIRE[2]	850	884	952	1,000	0.8%
Services	4,700	5,358	6,674	8,000	2.8%
Government[3]	11,250	11,700	12,600	13,500	0.8%
TOTAL	31,976	34,273	38,870	43,383	1.4%

Notes: 1. These estimates were interpolated or extrapolated from the official estimates of the source.

2. TCU stands for transportation, communications and utilities. FIRE stands for finance, insurance and real estate.

3. Government includes all federal, state and local public institutions, including public education services.

Source: Woods and Poole, 1991.

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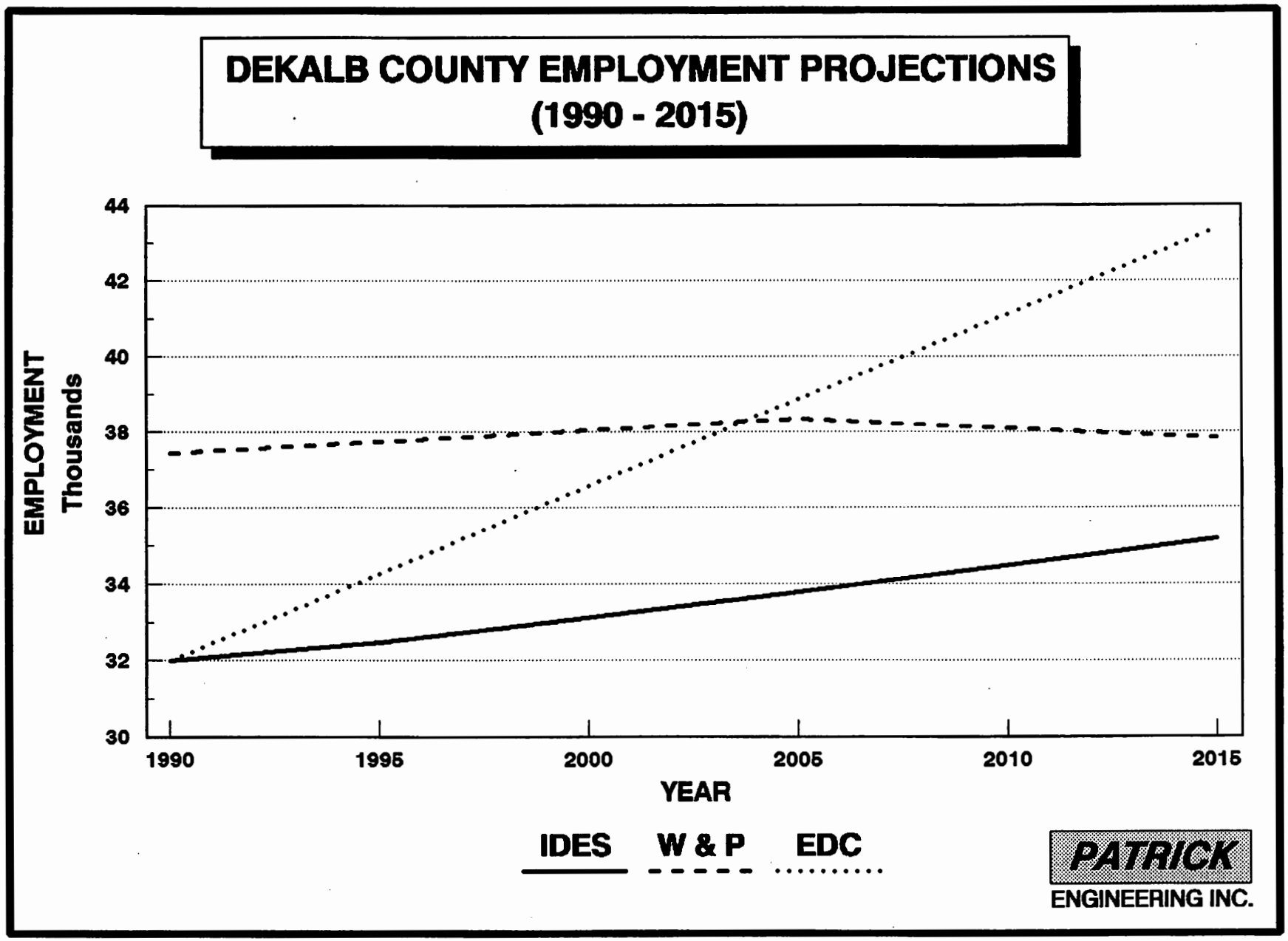
DEKALB COUNTY EMPLOYMENT PROJECTIONS
(1990 - 2015)
EMPLOYMENT
Thousands
44
42
40
38
36
34
32
30
1990
1995
2000
2005
2010
2015
YEAR
IDES
W & P
EDC
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FIGURE 3-3

CHAPTER FOUR
WASTE GENERATION

The quantity and origin of municipal waste and total waste that is generated in the county must be determined in order to plan appropriately for the county's future waste management system. The components incorporated into waste generation studies vary from county to county, so it is important to clarify the elements constituting waste generation for DeKalb County. The scope of this chapter is to quantify municipal waste and total waste generated within DeKalb County. The Solid Waste Planning and Recycling Act specifies that **municipal waste** be examined in the planning process. The IEPA has developed interpretations of the municipal waste definition since there has been confusion concerning what can and can not be included in municipal waste generation estimates. The Illinois Environmental Protection Agency interprets the definition used by the Solid Waste Planning and Recycling Act as follows:

Municipal waste does include:

(1) Abandoned or discarded household or commercial appliances, including white goods.

(2) Abandoned or waste parts from motor vehicles normally removed as a part of regular maintenance such as tires or batteries.

(3) Construction and demolition debris from buildings and roads.

(4) Wastes collected in a household hazardous waste collection.

(5) Landscape waste.

Municipal waste does <u>not</u> include:

(1) Special waste.

(2) Hazardous waste.

(3) Earth material moved or removed during demolition or construction.

(4) Scrap metal from industrial operations such as machining, lathe work, tool and die operations, etc.

(5) Abandoned or scrap motor vehicles.

(6) Surplus or donated clothing given to charitable organizations, such as Goodwill or Salvation Army.

(7) Surplus or donated food contributed for human consumption.

(8) Useable or reusable commodities donated to charitable organizations, such as Goodwill or Salvation Army.

Throughout this report, municipal waste is calculated as a sum of the following components: general household waste, commercial/institutional waste, industrial office and lunchroom waste, and construction/demolition waste. Total waste is calculated as the sum of the following components: general household waste, commercial/institutional waste, industrial waste (total industrial waste excluding special waste), and construction/demolition waste.

General Household Waste Generation. General household waste typically consists of waste which originates from single family households. General household waste is generally managed through landfilling, incineration by the homeowner, recycling, and composting. This section reviews the data collected for each of these management methods.

Landfilled Quantity of General Household Waste. The quantity of general household waste from DeKalb County that is landfilled was estimated by information collected from hauler and landfill data. In addition, the results from two general household waste weigh field studies were utilized to support the hauler and landfill data.

The primary method employed to determine the quantity of general household waste disposed per household was the analysis of data collected from the haulers and the local landfill. Information requested from haulers included the total amount of waste collected within DeKalb County during a one year period; the breakdown (by weight) of the general household, commercial/institutional/industrial (CII), and construction/demolition waste collected; the number of households served; the disposal facilities utilized; and the amount of waste imported into DeKalb County or exported out of DeKalb County for disposal. This information was used in conjunction with data supplied from the DeKalb County Landfill. The landfill information

included the quantity, breakdown by type and origin of waste delivered to the facility during 1992. Further details of the hauler/landfill methodology may be found in Appendix C.

The data compiled from both the haulers and the landfills suggests that 28,760 tons per year or 2.1 PCD (using Illinois Bureau of Budget population estimates) of DeKalb County general household waste will be landfilled in 1993, as shown in Table 4-1.

TABLE 4-1. RESIDENTIAL REFUSE COLLECTION IN DEKALB COUNTY

Hauler/Facility	Locations Serviced	Annual Quantity (tons)
Community Disposal	Sandwich, Unincorp.	***
DeKalb County Landfill - WMX (cash customers & general contractors)	DeKalb County	***
Illinois Valley Recycling		***
Marengo Disposal	Uunincorp.	***
Monarch Disposal	Unincorp.	***
Tri-County Disposal - WMX	Sandwich, Unincorp.	***
WMX/DCD	Cortland, DeKalb, Genoa, Hinckley, Kirkland, Kingston, Lee, Malta, Shabonna, Sycamore, Waterman, Unincorp.	***
Total (tons)		28,760

Key: *** proprietary information suppressed

Sources: Hauler Surveys, 1993. Landfill Survey, 1993. Municipal Surveys, 1993.

A general household waste weigh field study was conducted in DeKalb and Sycamore to determine the reliability of the hauler and landfill information gathered. The field study was conducted in August 1993 and November 1993 during the morning of weekly refuse collection. The quantity of refuse, recyclables and landscape waste placed at the curb by each household was independently weighed using a digital scale and recorded. The methodology of the field study is described more extensively in Appendix E.

Table 4-2 presents the data collected in the residential field study concerning the level of refuse discarded from households. The average quantity of refuse placed at the curb ranged from 31 to 36 pounds per household a week during the weeks studied. This is equivalent to 1.6 PCD to 1.8 PCD (using Illinois Bureau of the Budget population estimates), based on the average population per household size indicated in the 1990 Census for the municipality. The refuse per capita rate resulting from the waste weigh study was found to be slightly lower than the landfill/hauler waste per capita rate.

TABLE 4-2. FINDINGS OF DEKALB COUNTY GENERAL HOUSEHOLD WASTE WEIGH STUDIES: REFUSE COLLECTION

	DK-1[1]	SC-1[1]	DK-2[2]	SC-2[2]	DK-AVG[3]	SC-AVG[3]
Households Sampled	102	137	174	223	276	360
People/Household	3.2	2.5	3.2	2.5	3.2	2.5
Population Sampled	326	338	557	558	883	900
Refuse/Week (lbs)	4,491	4,617	5,418	6,490	9,909	11,107
Avg. Refuse/Household/Week (lbs)	44	34	31	29	36	31
Avg. Refuse/PCD	2.0	2.0	1.4	1.7	1.6	1.8

Key:
1. DK-1 and SC-1 represents the results of the first weigh study performed in August 1993.
2. DK-2 and SC-2 represents the results of the second weigh study performed in November 1993.
3. DK-AVG and SC-AVG represents the average results of the first and second weigh studies.

Incinerated Quantity of General Household Waste. Some DeKalb County residents may manage their refuse and/or landscape waste through incineration of general household waste by the homeowner, especially in the more rural areas of the county. The Environmental Protection Act prohibits open burning, although general provisions of Illinois regulations include certain exemptions for agricultural waste, domicile waste and landscape waste. Municipal representatives indicated that of the incineration of general household waste by the homeowner known to be occurring, that landscape waste, rather than refuse, was primarily burned.

Most sources believed that refuse disposed through incineration by the homeowner primarily occurred in more rural areas of the county. Measuring the amount of incineration of general household waste by the homeowner is difficult, since this activity is privately performed on a resident's property. A survey of rural homes was conducted within Livingston County, Illinois to determine the disposal activities of rural households. Findings from the survey indicated that an average of 60 percent of the waste generated by households without regular collection services is burned. The remaining 40 percent is either collected on an irregular basis, taken directly to the landfill by the homeowner, combined with a neighbor's or a business' waste or illegally dumped. According to information obtained by haulers, nearly all households within DeKalb County have some form of regular refuse collection service. Using the assumption that households without collection service use alternative methods and that most all homes in DeKalb County have collection service, it is estimated that little, if any, residential refuse is burned in DeKalb County. Surveys and interviews with municipal and hauler representatives tended to support this conclusion.

It has been asserted that landscape waste, on the other hand, is burned more regularly by residents within the County. Presently, the burning of landscape waste is largely unregulated and unrestricted throughout DeKalb County, other than for general fire prevention and safety measures. It is difficult to assess the quantity of landscape waste disposed through incineration by the homeowner since residents have different landscape management approaches and weather can significantly impact the amount of landscape waste generated each season.

Several municipal Public Works Departments collect landscape waste (brush, trees, storm damage, etc.) from residents and burn this material for disposal purposes. Historically, Public Works Departments have not tracked the quantities of landscape waste collected and burned. Furthermore, these departments indicated that it would be difficult to estimate these quantities due to the irregular volumes of this material collected from season to season, especially due to the impacts of weather. Therefore, the quantity of landscape waste burned by Public Works Departments cannot be accurately measured.

The level of general household waste burned is not included in this needs assessment due to the lack of available data. It may be necessary to further evaluate the level of incineration of general household waste by the homeowner if any anti-burning provisions and its impacts are to be analyzed.

Recycled Quantity of General Household Waste. Residential recycling in DeKalb County is occurring through curbside recycling programs, drop-off recycling centers, and composting and land application of landscape waste that is then returned to the economic mainstream or used in place of a raw material. The quantity of materials recycled was determined by gathering information from haulers and recycling centers. In addition, the findings of the general household waste weigh field studies were also utilized to support the hauler and recycling center data.

Haulers and one municipality providing curbside recycling programs in DeKalb County were contacted to supply quantitative data on curbside recycling programs. As of August 1993, curbside recycling programs are present in 11 of the 13 municipalities and in some unincorporated areas of the county. Haulers estimate that the curbside recycling programs will recycle 4,734 tons of material during 1993, as shown in Table 4-3. This is equivalent to 0.3 PCD of the total DeKalb population, or 0.7 PCD of the portion of the 13,222 single-family households. In other words, 37,674 DeKalb County residents are estimated to have curbside recycling services available to them.

Table 4-4 overviews the findings of the waste weigh field studies relating to the level of curbside recyclable materials discarded at the curb. The average quantity of recyclable material placed at the curb ranged from 10.3 to 13.7 pounds per household a week during the weeks studied. This is equivalent to a 0.5 PCD to a 0.8 PCD (using Illinois Bureau of the Budget population estimates), based on the average population per household size indicated in the 1990 Census for the municipality. The recycling per capita rate resulting from the waste weigh study is similar to the per capita rate determined from the hauler data.

TABLE 4-3. RESIDENTIAL CURBSIDE RECYCLING PROGRAMS IN DEKALB COUNTY

Curbside Recycling Provider	Communities with Curbside Recycling	Quantity of Recyclable Materials Collected in 1992
Community Disposal	Sandwich, Unincorp.	to start in 1993
Marengo Disposal	Unincorp.	***
Tri-County Disposal - WMX	Sandwich, Unincorp.	started in 1993
Village of Lee	Lee	***
WMX/DCD	Cortland, DeKalb, Genoa, Hinckley, Kirkland, Kingston, Malta, Shabonna, Sycamore, Waterman, Unincorp.	***
TOTAL (tons)		4,734

Key: *** proprietary information suppressed

Sources: Hauler Surveys, 1993. Municipal Surveys, 1993.

TABLE 4-4. FINDINGS OF DEKALB COUNTY GENERAL HOUSEHOLD WASTE WEIGH STUDIES: CURBSIDE RECYCLING COLLECTION

	DK-1[1]	SC-1[1]	DK-2[2]	SC-2[2]	DK-AVG[3]	SC-AVG[3]
Households Sampled	102	137	174	223	276	360
People/Household	3.2	2.5	3.2	2.5	3.2	2.5
Population Sampled	326	338	557	558	883	900
Residential Recyclables/Week (lbs)	995	1,981	1,856	2,957	2,851	4,938
Avg. Res. Recyclables/Household/Week (lbs)	9.8	14.5	10.7	13.3	10.3	13.7
Avg. Res. Recyclables/PCD	0.4	0.8	0.5	0.8	0.5	0.8

Key:
1. DK-1 and SC-1 represents the results of the first weigh study performed in August 1993.
2. DK-2 and SC-2 represents the results of the second weigh study performed in November 1993.
3. DK-AVG and SC-AVG represents the average results of the first and second weigh studies.

hauler, municipal and landscape waste facility data combined, it is expected that 8,172 tons, or 0.6 PCD, of residential landscape waste will be composted in 1993, as shown in Table 4-7.

TABLE 4-7. RESIDENTIAL LANDSCAPE WASTE COLLECTION IN DEKALB COUNTY

Hauler/Facility	Locations Serviced	Annual Quantity (tons)
City of DeKalb Public Works Dept.	DeKalb	***
Community Disposal	Sandwich, Unincorp.	***
DeKalb County Landscape Waste Facility	County-Wide	***
Monarch Disposal	Unincorp.	***
WMX/DCD	Cortland, Genoa, DeKalb, Hinckley, Kirkland, Kingston, Malta, Shabonna, Sycamore, Waterman, Unincorp.	***
Total (tons)		8,172

Key: *** proprietary information suppressed

Sources: Hauler Surveys, 1993. Municipal Surveys, 1993.

Table 4-8 overviews the findings of the waste weigh field studies relating to the level of landscape waste discarded from households. The average quantity of landscape waste placed at the curb ranged from 3.4 to 3.8 pounds per household a week during the weeks studied. This is equivalent to a <0.1 PCD to a 0.2 PCD (using Illinois Bureau of the Budget population estimates), based on the average population per household size indicated in the 1990 Census for the municipality. The landscape waste per capita rate resulting from the waste weigh study is slightly less than per capita rate determined from the hauler data.

Overall, using the available records of recycling quantities from curbside recycling programs, drop-off recycling centers, and landscape waste facilities, it is estimated that 14,866 tons, or 1.0 PCD, of residential material will be recycled in DeKalb County during 1993. Of this amount, 32 percent of the recyclable materials are collected from curbside collections, 13 percent from drop-off recycling sites, and 55 percent from landscape waste composting facilities.

TABLE 4-8. FINDINGS OF DEKALB COUNTY GENERAL HOUSEHOLD WASTE WEIGH STUDY: LANDSCAPE WASTE (LSW) COLLECTION

	DK-1[1]	SC-1[1]	DK-2[2]	SC-2[2]	DK-AVG[3]	SC-AVG[3]
Households Sampled	NA	137	174	223	174	360
People/Household	3.2	2.5	3.2	2.5	3.2	2.5
Population Sampled	326	338	557	558	557	900
Residential LSW/Week (lbs)	NA	1,252	22	119	22	1,371
Avg. Res. LSW/Household/Week (lbs)	NA	9.1	3.4	0.5	3.4	3.8
Avg. Res. LSW/PCD	NA	0.5	<0.1	<0.1	<0.1	0.2

Key:
1. DK-1 and SC-1 represents the results of the first weigh study performed in August 1993.
2. DK-2 and SC-2 represents the results of the second weigh study performed in November 1993.
3. DK-AVG and SC-AVG represents the average results of the first and second weigh studies.

Total Quantity of General Household Waste. Based on the data discussed above, a comprehensive assessment of general household waste generation can be made. Table 4-9 shows the general household waste estimates that will be used for determining municipal and total waste estimates for DeKalb County. The estimated DeKalb County general household waste generation rate of 3.1 PCD (using the Illinois Bureau of the Budget population estimates) is slightly higher than the average of what has been found in other studies of rural Illinois counties. Estimates of general household waste generation from a compilation of data from the Needs Assessments of 10 rural Illinois counties of less than 100,000 population ranged from 2.1 PCD to 3.7 PCD with a median of 3.0 PCD.

TABLE 4-9. ESTIMATED DEKALB COUNTY GENERAL HOUSEHOLD WASTE GENERATION

	Est. 1993 Tons	PCD[1]	%
Landfilled	28,760	2.1	67%
Incinerated	0	0.0	0%
Recycled	6,694	0.5	16%
Composted and Land-Applied	8,172	0.6	18%
TOTAL (tons)	43,626	3.1	100%

Notes: PCD means pounds per capita per day. The Illinois Bureau of the Budget population estimates were used to determine PCD.

Commercial, Institutional and Industrial Waste Generation. Commercial and institutional waste typically consists of waste originating from businesses and institutions which may be transportation, communications, utility, trade, office, service or government related; multi-family residences (using commercial dumpsters); and trailer parks (using commercial dumpsters). Industrial waste typically consists of waste from industries which is generally manufacturing related. Wastes from commercial, institutional and industrial (CII) establishments is typically collected and managed collectively through landfilling, incineration, recycling or composting. This section reviews the data collected for each of these quantities.

Landfilled Quantities of Commercial/Institutional and Industrial (CII) Waste. The quantity of CII waste being landfilled was estimated using two data collection methods. First hauling companies were asked to provide information on the quantity of CII waste collected in the county. Landfill data was also obtained to supplement the haulers data. Second, an extensive survey of CII establishments in DeKalb County was conducted to determine the amount of waste disposed per employee by these establishments. It should be noted that although the entire industrial waste stream is not included in municipal waste, a discussion of industrial waste is included in this section because commercial, institutional and industrial waste are often collected together.

The primary method used to determine the quantity of CII waste landfilled was the hauler/landfill survey. Data concerning CII waste quantities was only available from haulers and the landfill operator in a lump sum, since haulers have no reason to track this data separately. The data collected indicates that approximately 29,851 tons of CII waste from DeKalb County will be landfilled in 1993, as shown in Table 4-10. This quantity is equivalent to 5.1 pounds per employee per day (PED), based on employment estimates from the Illinois Department of Employment Security, or 2.1 PCD, based on population estimates from the Illinois Bureau of the Budget.

TABLE 4-10. CII ESTABLISHMENT REFUSE COLLECTION IN DEKALB COUNTY		
Hauler/Facility	Locations Serviced	Annual Quantity (tons)
BFI - Rockford	Genoa, Kirkland, Sycamore	***
Community Disposal	Sandwich, Unincorp.	***
DeKalb County Landfill - WMX (cash customers & general contractors)	DeKalb County	***
Illinois Valley Recycling		***
Marengo Disposal	Unincorp.	***
Monarch Disposal	Unincorp.	***
Northern Illinois University		
Tri-County Disposal - WMX	Sandwich, Unincorp.	***
WMX/DCD	Cortland, DeKalb, Genoa, Hinckley, Kirkland, Kingston, Lee, Malta, Shabonna, Sycamore, Waterman, Unincorp.	***
Total (tons)		29,851
Key: *** proprietary information suppressed		
Sources: Hauler Surveys, 1993. Landfill Survey, 1993.		

Findings from CII establishment surveys were used to check the reliability of the hauler/landfill data. Appendix D describes the survey methodology and presents the results of this survey. As shown in Table 4-11, the survey results (which utilized the Illinois Department of Employment Security employment projections) indicate that a total of 35,767 tons of CII waste will be landfilled in 1993. This is equivalent to 6.1 PED based on employment estimates from the Illinois Department of Employment Security or 2.6 PCD based on population estimates from the Bureau of the Budget. It has been found in other studies conducted in Illinois counties, that when comparing CII establishment survey findings with actual waste weigh findings from CII establishment field studies, the surveys tended to overestimate the establishment's refuse quantities. This may explain why the CII refuse quantity developed using the establishment surveys is higher than quantity developed using the landfill/hauler data.

TABLE 4-11. FINDINGS OF DEKALB COUNTY COMMERCIAL, INSTITUTIONAL AND INDUSTRIAL SURVEYS

Employment Type	S.I.C. Code	DeKalb Employees[1]	Disposed (PED)2[2]	Disposed (TPY)[2]
Industrial	1000-3999	7,626	7.0	9,741
Mining and Construction	1000-1999	926	4.1	693
Manufacturing	2000-3999	6,700	7.4	9,048
Commercial/Institutional	4000-9399	24,350	5.9	26,026
TCU[3]	4000-4999	925	3.3	557
Trade	5000-5999	6,625	9.2	11,123
FIRE3[3]	6000-6999	850	33.5	5,197
Services	7000-8999	4,700	5.4	4,632
Government & Univ./Coll.	9000-9399	11,250	2.2	4,517
Total	1000-9399	31,976	6.1	35,767

Notes: 1. Illinois Department of Employment Security employment estimates were used to develop PED.
2. PED means pounds per employee per day and TPY means tons per year.
3. TCU means transportation, communications, and utilities. FIRE means finance, insurance and real estate.

Source: DeKalb County CII Establishment Survey Findings, 1993.

The findings from the CII surveys indicating the separation of commercial/institutional waste from industrial waste were used to determine the breakdown of commercial/institutional refuse and industrial refuse. The amount landfilled was estimated from the hauler/landfill data. Approximately 45 percent or 13,433 tons of CII waste landfilled originates from commercial/institutional establishments and 55 percent or 16,418 tons originates from industrial establishments.

In order to determine the office and lunchroom portion of industrial waste for the municipal waste generation estimates, an estimate of office waste generation was multiplied by the estimated number of manufacturing employees located in the county. The Northeast Recycling Council estimates that waste generation among office workers ranges from 1.4 to 2.3 PED. Furthermore, waste audit studies performed throughout Illinois by Patrick Engineering

Inc. indicate that office waste generation is approximately 2.3 PED. Multiplying this 2.3 PED estimate (and assuming that this estimate accounts for office waste and lunchroom waste) by the IDES manufacturing employment estimate of 6,700 employees gives an estimated generation rate of industrial office and lunchroom waste for DeKalb County of 2,812 tons. This is equivalent to 0.5 PED or 0.2 PCD for all CII employment (based on IDES employment estimates and IBOB population estimates). Table 4-12 presents a breakdown of CII waste landfilled.

TABLE 4-12. BREAKDOWN OF CII WASTE LANDFILLED

	Municipal Waste (tons)	Total Waste (tons)
Commercial/Institutional Waste	13,433	13,433
Industrial Office and lunchroom Waste	2,812	
Industrial Waste		16,418
Comm/Inst & Ind O/L Waste	16,245	
CII Waste		29,851

Incinerated Quantities of CII Waste. Fourteen establishments in DeKalb County were identified by IEPA records to be operating seventeen permitted incinerators. Each facility was sent a survey to determine the status of the incinerator and the quantity of the materials disposed through this method. Only three facilities listed as having incinerators responded that their incinerator was in operation and was used to dispose of municipal waste. The commercial and institutional facilities with incinerators are estimated to incinerate approximately 83 tons of municipal waste in 1993 and the industrial facility with an incinerator is estimated to incinerate approximately 38 tons of municipal waste in 1993, as shown in Table 4-13.

Recycled Quantities of Commercial/Institutional/Industrial (CII) Waste. Industrial recycling consists of recycling activities engaged in by CII establishments (non-municipal waste recycling only). Commercial/institutional recycling consists of recycling activities engaged in by CII establishments (municipal waste recycling only), Northern Illinois University recycling, and multi-family recycling, since this material is collected in commercial dumpsters. CII municipal waste recycling primarily includes corrugated cardboard, office paper and other

recyclable materials commonly found in residential collection programs. CII non-municipal waste recycling primarily includes industrial recycling such as scrap ferrous and non-ferrous metals, scrap plastics, road fill, etc.

TABLE 4-13. CII ESTABLISHMENT MUNICIPAL WASTE INCINERATION IN DEKALB COUNTY

	C/I Establishment (tons)	Ind. Establishment (tons)	Total
Art's Food Market, Sandwich	1		1
Barber-Greene, DeKalb		38	38
Sandwich Community Hospital, Sandwich	82		82
TOTAL (tons)	82	38	121

Source: Incinerator Surveys, 1993.

Municipal, hauler and establishment surveys indicate that numerous CII establishments are recycling within DeKalb County. Most establishment recycling occurring within DeKalb County is either contracted through a hauler/recycling service or shipped directly to a market by the individual establishments. Haulers providing recycling services to establishments were contacted to determine the quantities of materials recycled. In addition, establishments with over 100 employees and large grocers/retailers located in DeKalb County were contacted to determine if they were arranging their own markets for recyclable materials generated at their place of business. The haulers surveyed were asked to provide the name of the business they serviced and if the recycled waste was municipal or non-municipal in order to eliminate double-counting of materials reported directly by businesses. Establishments managing their own recyclables were contacted rather than the recycling markets since these facilities are often located out-of-county.

Haulers estimated that 7,863 tons of commercial/institutional materials will be recycled during 1993, as shown in Table 4-14. Commercial and institutional establishments which independently arrange their own end markets without the use of haulers estimated that an additional 466 tons of municipal waste will be recycled during 1993, as shown in Table 4-15. Industrial establishments which independently arrange their own end markets without the use of

haulers estimated that an additional 228 tons of municipal waste will be recycled during 1993. Survey results of industrial establishments estimated that 12,952 tons of industrial (non-municipal) waste will be recycled during 1993.

TABLE 4-14. CII RECYCLING PROGRAMS BY HAULERS IN DEKALB COUNTY

Hauler/Facility	Location Serviced	Annual Quantity (tons)
BFI - Rockford	Sycamore	***
WMX/DCD	Cortland, DeKalb, Genoa, Hinckley, Kirkland, Kingston, Malta, Shabonna, Sycamore, Waterman, Unincorp.	***
TOTAL (tons)		7,863

Key: *** proprietary information suppressed

Sources: CII Establishment Surveys, 1993. Hauler Surveys, 1993.

TABLE 4-15. CII ESTABLISHMENT RECYCLING PROGRAMS IN DEKALB COUNTY

Establishment with Non-Hauler Recycling Program	Comm/Inst. MW Recycling (tons)	Industrial MW Recycling (tons)
A.G. Communications		***
Barber Greene		***
Eagle	***	
Greenlee Tool		***
Jewel	***	
3M		***
Walmart	***	
TOTAL (tons)	466	228

Key: *** proprietary information suppressed

Sources: CII Establishment Surveys, 1993. Hauler Surveys, 1993.

TABLE 4-18. ESTIMATED DEKALB COUNTY COMM./INST. WASTE GENERATION				
	Est. 1993 Tons	PCD[1]	PED[1]	%
Landfilled	13,433	1.0	2.3	53%
Incinerated	83	<0.1	<0.1	<1%
Recycled	11,316	0.8	1.9	45%
Composted & Land Applied	404	<0.1	0.1	2%
TOTAL (tons)	25,236	1.8	4.3	100%

Notes: 1. PCD means pounds per capita per day. PED means pounds per employee per day. PED was developed using the Illinois Department of Employment Security employment estimates.

Total Quantities of Industrial Waste. Based on all of the data discussed above, a comprehensive assessment of industrial waste can be made. Table 4-19 shows the industrial waste estimates that will be used for determining total waste estimates for DeKalb County. The estimated DeKalb County industrial waste generation rate of 2.1 PCD (using the Illinois Bureau of the Budget population estimates) is slightly higher than the average of what has been found in other studies of rural Illinois counties. Estimates of industrial waste generation from a compilation of data from the Needs Assessments of 10 rural Illinois counties of less than 100,000 population ranged from 0.2 PCD to 1.8 PCD, with a median of 1.6 PCD.

TABLE 4-19. ESTIMATED DEKALB COUNTY INDUSTRIAL WASTE GENERATION				
	Est. 1993 Tons	PCD[1]	PED	%
Landfilled	16,418	1.2	2.8	55%
Incinerated	38	<0.1	<0.1	<1%
Recycled	13,180	0.9	2.3	44%
Composted & Land Applied	0	0.0	0.0	0%
TOTAL (tons)	29,635	2.1	5.1	100%

Notes: 1. PCD means pounds per capita per day. PED means pounds per employee per day. PED was developed using the Illinois Department of Employment Security employment estimates.

Total Quantities of Industrial Office and Lunchroom Waste. Based on all of the data discussed above, a comprehensive assessment of industrial office and lunchroom waste can be made. Table 4-20 shows the industrial office and lunchroom waste estimates that will be used for determining municipal waste estimates for DeKalb County. It is estimated that 0.2 PCD is generated by the industrial office and lunchroom sector of DeKalb County.

TABLE 4-20. ESTIMATED DEKALB COUNTY INDUSTRIAL OFFICE AND LUNCHROOM WASTE GENERATION

	Est. 1993 Tons	PCD[1]	PED	%
Landfilled	2,812	0.2	0.5	92.5%
Incinerated	0	0.0	0.0	0%
Recycled	228	<0.1	<0.1	7.5%
Composted & Land Applied	0	0.0	0.0	0%
TOTAL (tons)	3,040	0.2	0.5	100%

Notes: 1. PCD means pounds per capita per day. PED means pounds per employee per day. PED was developed using the Illinois Department of Employment Security employment estimates.

Construction and Demolition (C/D) Debris Generation. C/D debris typically consists of debris resulting from construction, demolition and excavation activities. Landfill and hauler data indicates that approximately 13,972 tons, or 1.0 PCD, of C/D debris will be landfilled in DeKalb County from construction/demolition activities during 1993, as shown in Table 4-21. This is equivalent to 1.0 PCD, based on the Illinois Bureau of Budget population estimates, as shown in Table 4-22. Several construction contractors were contacted as well to determine the reliability of the hauler/landfill data estimates. In most cases, the contractors stated that C/D waste was disposed through landfilling. Contractors had a difficult time estimating the quantity of C/D waste generated since construction and excavation activities generate a wide range of waste, depending on the characteristics of the particular job. Studies conducted in other Illinois counties have indicated that significant quantities are likely to be burned or buried on-site as well. Quantities of construction and demolition waste that are managed through on-site burning or burying can not be adequately measured, and therefore are not included in waste generation estimates for this report.

TABLE 4-21. C/D WASTE COLLECTION IN DEKALB COUNTY		
		Est. 1993 Tons
Community Disposal	Sandwich, Unincorp.	***
DeKalb County Landfill - WMX (cash customers & general contractors)	DeKalb County	***
Tri-County Disposal - WMX	Sandwich, Unincorp.	***
WMX/DCD	Cortland, DeKalb, Genoa, Hinckley, Kirkland, Kingston, Lee, Malta, Shabonna, Sycamore, Waterman, Unincorp.	***
TOTAL (tons)		13,972
Key: *** proprietary information suppressed Sources: Hauler Surveys, 1993. Landfill Survey, 1993.		

TABLE 4-22. ESTIMATED DEKALB COUNTY CONSTRUCTION/DEMOLITION WASTE GENERATION			
	Est. 1993 Tons	PCD[1]	%
Landfilled	13,972	1.0	100%
TOTAL (tons)	13,972	1.0	100%
Note: 1. PCD means pounds per capita per day. The Illinois Bureau of the Budget population estimates were used to develop PCD.			

Municipal Waste Generation. Adding together the municipal waste stream components, it is estimated that 85,874 tons, or 6.1 PCD (using the Illinois Bureau of the Budget population estimates), of municipal waste will be generated during 1993, as shown in Table 4-23 and Figure 4-1.

Total Waste Generation. Adding together the total waste stream components, an estimated 112,469 tons, or 8.0 pounds per capita a day (using the Illinois Bureau of the Budget population estimates), of total waste will be generated during 1993, as shown in Table 4-24 and Figure 4-1.

TABLE 4-23. ESTIMATED DEKALB COUNTY MUNICIPAL WASTE GENERATION			
	Est. 1993 TPY[1]	PCD[1]	%
General Household Waste	43,626	3.1	51%
Commercial/Institutional	25,236	1.8	29%
Industrial O & LR Waste	3,040	0.2	4%
Construction/Demolition	13,972	1.0	16%
TOTAL MW GENERATION (tons)	85,874	6.1	100%
Note: 1. TPY means tons per year. PCD means pounds per capita per day. The Illinois Bureau of the Budget population estimates were used to develop PCD.			

TABLE 4-24. ESTIMATED DEKALB COUNTY TOTAL WASTE GENERATION			
	Est. 1992 TPY[1]	PCD[1]	%
Residential	43,626	3.1	39%
Commercial/Institutional	25,236	1.8	22%
Industrial	29,635	2.1	26%
Construction/Demolition	13,972	1.0	12%
TOTAL TW GENERATION (tons)	112,469	8.0	100%
Note: 1. TPY means tons per year. PCD means pounds per capita per day. The Illinois Bureau of the Budget population estimates were used to develop PCD.			

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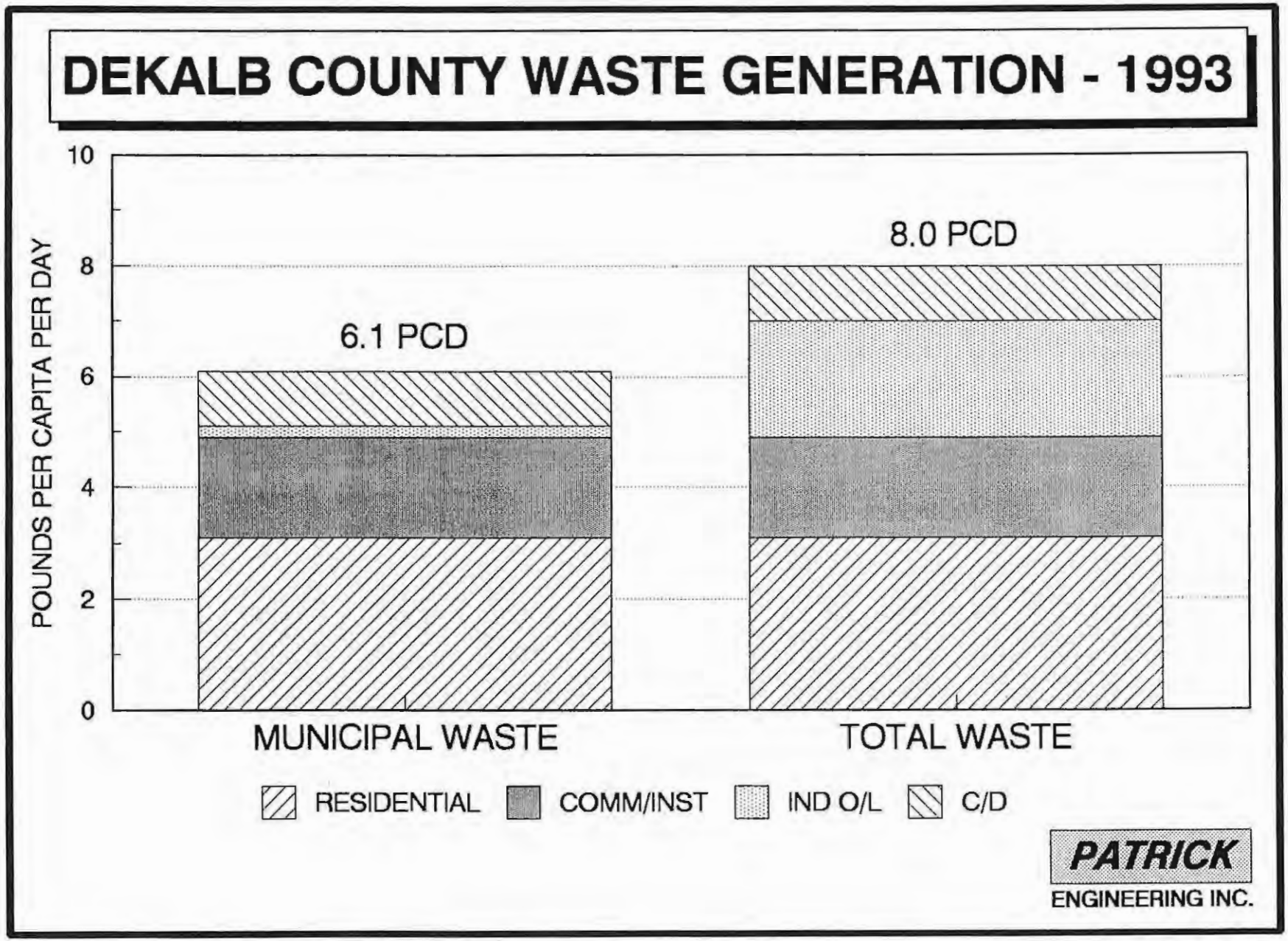

DEKALB COUNTY WASTE GENERATION - 1993
POUNDS PER CAPITA PER DAY
10
8
6
4
2
0
6.1 PCD
8.0 PCD
MUNICIPAL WASTE
TOTAL WASTE
RESIDENTIAL
COMM/INST
IND O/L
C/D
PATRICK
ENGINEERING INC.

FIGURE 4-1

CHAPTER FIVE
WASTE COMPOSITION

In order to design an efficient waste management system for DeKalb County, it is useful to estimate not only the quantity of municipal waste, but also the composition of municipal waste, both by weight and volume. Once the weight of certain materials such as paper, plastic or food waste are determined, efficient methods can then be planned to reduce, reuse, recycle or dispose of those materials. This chapter presents estimates of composition **by weight** for general household waste, commercial/institutional/industrial (CII) waste and municipal waste in DeKalb County. In addition, this chapter also presents estimates of composition **by volume** for general household waste, CII waste and municipal waste in DeKalb County.

Composition by Weight. One method of determining the composition of waste by weight is a waste sorting study. Waste sorting studies have been conducted recently in Ogle, Whiteside and McLean Counties. In each of these studies, random samples of waste were sorted into different categories and then weighed. The studies were conducted during different periods of the year in order to account for seasonal variation. Findings from the sorting studies are considered to be representative of DeKalb County's waste composition, since the demographics of these three counties are similar to the demographics of DeKalb County.

General Household Waste. Table 5-1 shows the composition by weight estimates of general household waste that were determined in the sorting studies. The results obtained in the three counties are very similar. "Other" wastes includes rubber, dirt textiles, composite materials, and wastes that don't fit into the other categories.

As indicated by the averages listed in the table, paper was found to be the largest portion of general household waste (34 percent). Landscape waste and food waste were the second largest categories (15 percent each). Other waste was the third largest category (13 percent). Plastic, glass and metals comprise smaller but still significant portions of the wastestream.

TABLE 5-1. GENERAL HOUSEHOLD WASTE COMPOSITION IN OGLE, MCLEAN, AND WHITESIDE COUNTIES (% OF TOTAL WEIGHT)

	Ogle	McLean	Whiteside	Average
Paper	33%	37%	33%	34%
Landscape	16%	15%	16%	15%
Food	17%	18%	10%	15%
Plastic	12%	10%	11%	11%
Glass	6%	7%	5%	6%
Metals	6%	5%	6%	6%
Other[1]	10%	9%	20%	13%
TOTAL[2]	100%	100%	100%	100%

Notes: 1. Other includes textiles, rubber, wood and miscellaneous materials.
2. Totals may not add to 100 due to rounding.

Sources: Ogle Needs Assessment, 1991. McLean Needs Assessment, 1991. Whiteside Needs Assessment, 1989.

CII Waste. Table 5-2 shows the CII waste composition by weight estimates determined through the survey findings of the waste sorting studies conducted in Ogle, McLean and Whiteside counties. As indicated by the adjusted averages from the sorting studies listed in the table, paper was found to be the largest portion of commercial/institutional waste (51 percent). Other waste and food waste were the second largest categories (14 and 11 percent). Plastic and metals were the third largest categories (8 and 7 percent). Landscape waste and glass comprise smaller but still significant portions of the wastestream.

Municipal Waste. Table 5-3 shows the municipal waste composition by weight breakdown for Ogle, McLean and Whiteside counties, as well as an average for the three counties. As indicated by the averages listed in the table, paper was found to be the largest portion of municipal waste (41 percent). Landscape waste was the second largest category (18 percent). Glass and metals were the third largest categories (9 percent each). Food waste, glass, and plastic comprise smaller but still significant portions of the wastestream.

TABLE 5-2. CII WASTE COMPOSITION IN OGLE, MCLEAN, AND WHITESIDE COUNTIES (% OF TOTAL WEIGHT)

	Ogle	McLean	Whiteside	Average
Paper	60%	63%	31%	51%
Landscape	0%	7%	9%	5%
Food	12%	9%	11%	11%
Plastic	10%	6%	9%	8%
Glass	4%	3%	5%	4%
Metals	8%	2%	13%	7%
Other[1]	6%	11%	23%	14%
TOTAL[2]	100%	100%	100%	100%

Notes: 1. Other includes textiles, rubber, wood and miscellaneous materials.
2. Totals may not add to 100 due to rounding.

Sources: Ogle Needs Assessment, 1991. McLean Needs Assessment, 1991. Whiteside Needs Assessment, 1989.

TABLE 5-3. MUNICIPAL WASTE COMPOSITION IN OGLE, MCLEAN, AND WHITESIDE COUNTIES (% OF TOTAL WEIGHT)

	Ogle	McLean	Whiteside	Average	National Studies
Paper	40%	50%	33%	41%	41%
Landscape	12%	11%	14%	12%	18%
Food	16%	14%	10%	13%	8%
Plastic	12%	6%	9%	9%	7%
Glass	5%	5%	4%	5%	8%
Metals	6%	4%	7%	6%	9%
Other[1]	9%	12%	22%	14%	9%
TOTAL[2]	100%	100%	100%	100%	100%

Notes: 1. Other includes textiles, rubber, wood and miscellaneous materials.
2. Totals may not add to 100 due to rounding.

Sources: Ogle Needs Assessment, 1991. McLean Needs Assessment, 1991. Whiteside Needs Assessment, 1989.

The averages from the three-county sorting studies were utilized to develop waste composition by weight estimates for DeKalb County. Table 5-4 overviews the composition of general household waste, CII waste and municipal waste for DeKalb County.

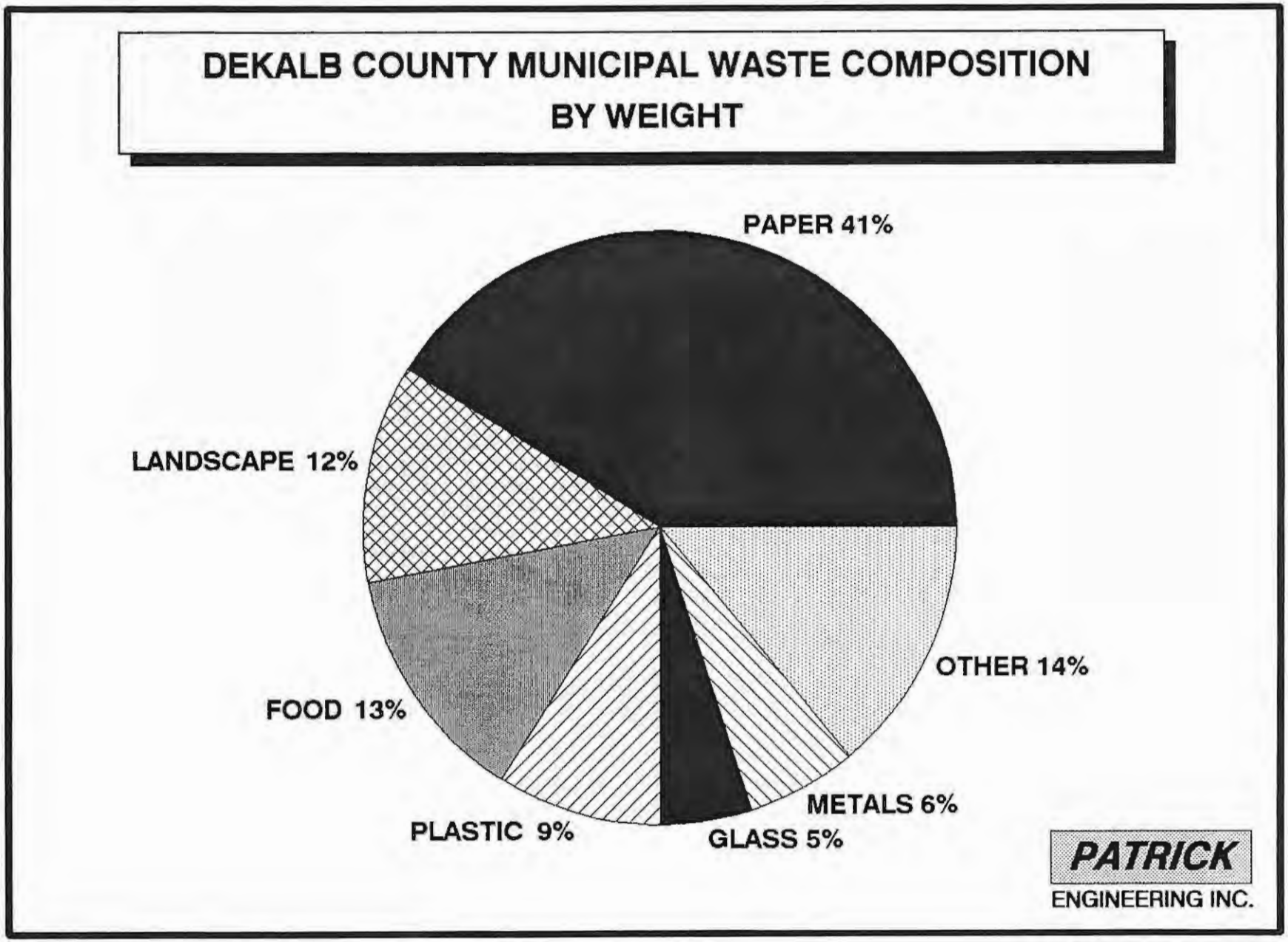
TABLE 5-4. ESTIMATED GENERAL HOUSEHOLD, CII AND MUNICIPAL WASTE COMPOSITION BY WEIGHT IN DEKALB COUNTY

	RES. (TPY)[1]	RES. (%)	CII (TPY)	COM/INST (%)	MW (TPY)	MW (%)
Paper	14,640	34%	27,984	51%	34,976	41%
Landscape	6,459	15%	2,744	5%	10,237	12%
Food	6,459	15%	6,036	11%	11,090	13%
Plastic	4,737	11%	4,390	8%	7,678	9%
Glass	2,584	6%	2,195	4%	4,265	5%
Metals	2,584	6%	3,841	7%	5,118	6%
Other[2]	5,598	14%	7,682	14%	11,943	14%
TOTAL[3]	43,060	100%	54,871	100%	85,308	100%

Notes: 1. TPY means tons per year.
2. Other includes textiles, rubber, wood and miscellaneous materials.
3. Totals may not add to 100 due to rounding.

Sources: Ogle Needs Assessment, 1991. McLean Needs Assessment, 1991. Whiteside Needs Assessment, 1989.

Based on Table 5-4, it can be concluded that recycling and waste reduction efforts geared toward paper, other wastes, food waste and landscape waste could have the most effect on increasing recycling levels (which are determined by weight). Figure 5-1 depicts the breakdown of the materials comprising municipal waste by weight.


DEKALB COUNTY MUNICIPAL WASTE COMPOSITION
BY WEIGHT
PAPER 41%
LANDSCAPE 12%
OTHER 14%
FOOD 13%
METALS 6%
PLASTIC 9%
GLASS 5%
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ENGINEERING INC.

FIGURE 5-1

It should be noted that one potential bias of using three-county studies to determine the waste composition for DeKalb County is that the studies were conducted prior to the ban on the disposal of landscape waste in landfills. As a result of the ban, some Illinois counties have experienced a drop in the quantity of landscape waste discarded from households due the associated costs of handling landscape waste separate from refuse and sending this material to a landscape waste facility instead of to a landfill. A significant reduction of landscape waste discarded could affect the overall composition of the wastestream.

Assuming that the three counties studies' were representative of DeKalb County before the ban went into effect, it appears, however, that DeKalb County continues to discard similar quantities of landscape waste in 1993 as before the ban in 1990. According to the residential composting estimates discussed in Chapters 4 and 6, it is estimated that 18 percent of general household waste discarded in 1993 is landscape waste. The adjusted average of three counties before the ban indicate that approximately 15 percent of the general household wastestream was landscape waste before the 1990 ban, similar to the existing levels in DeKalb County. Hauler and municipal officials concur that although residents may have changed the way they discard of landscape waste (i.e., it is now bagged separately from refuse), many residents continue to set this material out for collection.

Composition by Volume. The volume of each waste constituent is also important in designing the overall waste management system. Knowledge of the volume composition of waste is important, for instance, in determining the capacity of a transportation system to pick up glass, aluminum, ferrous metal, plastic, paper, etc. at the curbside. It is also important to understand the volume composition of waste in order to choose the appropriate targets of a waste reduction campaign to save landfill space.

As a measure to determine waste composition by weight, calculations were developed using the preceding weight percent estimates and ratios of weight percent to volume percent which have been determined by Franklin Associates and the Garbage Project. The Franklin Associates/Garbage Project ratios were obtained by excavating landfills and then measuring the volume of waste materials at the same level of compression that existed inside the landfill.

General Household Waste. Table 5-5 shows the composition by volume estimates of general household waste. As can be seen in this table, paper was found to be the most significant portion of general household waste (37 percent). Plastic is the second largest category (26 percent). Landscape waste and metals are the third largest categories (9 percent for each). Food waste, other wastes and glass comprise smaller but still significant portions of the wastestream.

TABLE 5-5. ESTIMATED COMPOSITION OF DEKALB COUNTY'S GENERAL HOUSEHOLD WASTE: WEIGHT AND VOLUME

	% by Weight	Amount in One Ton of Waste (lbs)	Density (lbs/yd)	Cubic Yards	% by Volume
Paper	34	680	784	0.9	37
Landscape Waste	15	300	1,500	0.2	9
Food	15	300	2,000	0.2	6
Plastic	11	220	359	0.6	26
Glass	6	120	2,268	0.1	2
Metals	6	120	560	0.2	9
Other	13	260	2,000	0.1	6

Source: Franklin Associates, Ltd. and the Garbage Project, Estimates of the Volume of MW and Selected Components, 1989.

CII Waste. Table 5-6 shows the CII waste composition by volume estimates. As can be seen in this table, paper was found to be the most significant portion of CII waste (55%). Plastic was the second largest category (19 percent), and metals was the third largest category (11 percent). Other waste, food waste, landscape waste and glass comprise smaller but still significant portions of the wastestream.

TABLE 5-6. ESTIMATED COMPOSITION OF DEKALB COUNTY'S CII WASTE: WEIGHT AND VOLUME

	% by Weight	Amount in One Ton of Waste (lbs)	Density (lbs/yd)	Cubic Yards	% by Volume
Paper	51	1,020	784	1.3	55
Landscape Waste	5	100	1,500	0.1	3
Food	11	220	2,000	0.1	5
Plastic	8	160	359	0.4	19
Glass	4	80	2,268	<0.1	2
Metals	7	140	560	0.3	11
Other	14	280	2,000	0.1	6

Source: Franklin Associates, Ltd. and the Garbage Project, Estimates of the Volume of MW and Selected Components, 1989.

Municipal Waste. Table 5-7 shows the municipal waste composition by volume breakdown. As can be seen in this table, paper was found to be the most significant portion of municipal waste (47 percent). Plastic was the next largest category (22 percent) and metals was the third largest category (10 percent). Landscape waste, food waste, other waste and glass comprise smaller but still significant portions of the wastestream.

Based on Tables 5-5, 5-6 and 5-7, it can be concluded that recycling and waste reduction efforts geared toward paper and plastic could have the most effect on regional landfill capacity. Figure 5-2 depicts the breakdown of the materials comprising municipal waste by volume.

TABLE 5-7. ESTIMATED COMPOSITION OF DEKALB COUNTY'S MUNICIPAL WASTE: WEIGHT AND VOLUME

	% by Weight	Amount in One Ton of Waste (lbs)	Density (lbs/yd)	Cubic Yards	% by Volume
Paper	41	820	784	1.0	47
Landscape Waste	12	240	1,500	0.2	7
Food	13	260	2,000	0.1	6
Plastic	9	180	359	0.5	22
Glass	5	100	2,268	<0.1	2
Metals	6	120	560	0.2	10
Other	14	280	2,000	0.1	6

Source: Franklin Associates, Ltd. and the Garbage Project, Estimates of the Volume of MW and Selected Components, 1989.

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DEKALB COUNTY MUNICIPAL WASTE COMPOSITION BY VOLUME

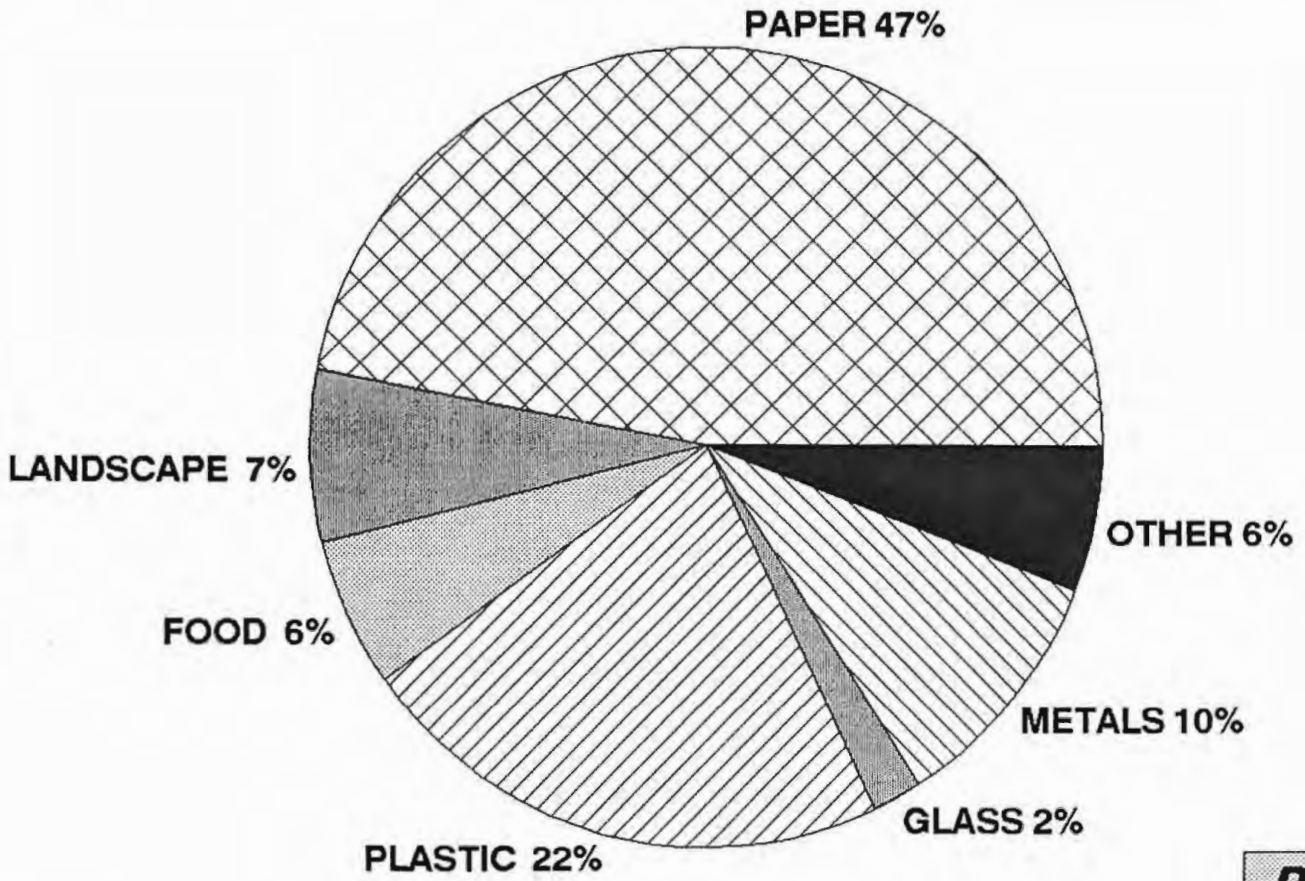

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FIGURE 5-2

CHAPTER SIX

EXISTING WASTE MANAGEMENT SYSTEM

This chapter of the report describes the existing collection, transportation, final disposal and recycling system for municipal waste and total waste in DeKalb County. It provides a description of how the waste is managed from the point of generation to its final destination. Included is a breakdown of the amount of material that is landfilled, incinerated, recycled, composted and land applied.

Waste Collection. One important consideration in the development of a waste management plan is the type of contractual arrangements for waste collection that currently exist. Typically four types of contractual arrangements are used within Illinois for waste collection. They are as follows:

- **Municipal Service.** Under this arrangement, municipal employees collect waste with municipally owned equipment.
- **Municipal Contract.** Under this arrangement, one or more private haulers operate under contract to the municipality. The municipality collects fees or taxes and then pays the waste hauler(s) for contracted services.
- **Franchise Contract.** Under a franchise structure, the municipality grants or sells hauling privileges (franchises) to one or more private haulers for waste collection services in the municipality. The fees are collected directly from the customer by the waste hauler(s).
- **Private Contract.** Under private contract collection, the individual resident or business contracts directly with the private waste hauler for waste collection services. The only involvement by the municipality is the possible licensing of waste haulers.

Seven private hauling companies, as listed in Appendix A, currently provide collection services in DeKalb County. It should be noted that in August, 1993, Waste Management - West (WMX) acquired DeKalb County Disposal (DCD). Since information was collected from each company before the acquisition took place, WMX/DCD is used to represent this company throughout the report. From May, 1993 through June, 1993, waste collection surveys were

conducted among the municipalities within DeKalb County. Table 6-1 summarizes the responses and overviews the existing formats of residential collection programs in DeKalb County.

TABLE 6-1. DEKALB COUNTY GENERAL HOUSEHOLD WASTE COLLECTION OVERVIEW

Municipality	Hauler	Contract Type[1]	Refuse/$[2]	Recycling/$[3]	LSW/$[4]
Cortland	WMX/DCD	Private	$11.90	IIR	$0.75/ST
DeKalb	WMX/DCD	Municipal	$10.42	IIR	IIR
Genoa	WMX/DCD	Municipal	$ 8.51	$1.80	$2.25/ST
Hinckley	WMX/DCD	Municipal	$ 9.50	$1.80	$2.00/ST
Kirkland	WMX/DCD	Municipal	$ 9.09	$1.80	N/A
Kingston	WMX/DCD	Municipal	$ 8.16	$2.60	$2.50/ST
Lee	WMX/DCD	Municipal	$11.27	$0.00	N/A
Malta	WMX/DCD	Private	$12.75	IIR	$0.75/ST
Sandwich	Community	Private	$13.50	N/A	$1.30/ST
	TCD (WMX)	Private	$10.95 $11.95	Blue Bags Blue Bin	$1.00/ST 2 per Bag
Shabbona	WMX/DCD	Municipal	$ 9.50	$1.80	$2.00/ST
Somonauk	Community Disposal	Private	$13.50	N/A	$1.30/ST
	TCD (WMX)	Private	$14.75	N/A	$1.00/ST 2 per Bag
Sycamore	WMX/DCD	Municipal	$ 9.96	IIR	IIR
Waterman	WMX/DCD	Municipal	$ 9.50	$1.80	$2.00/ST

Notes:
1. Collection contract types include contract (C), municipal (M) and private (P).
2. Refuse costs within parenthesis indicate those indirectly paid through the community's tax base.
3. IIR = costs included in refuse
4. ST = price per sticker

As shown in Table 6-1, 9 municipalities contract their waste collection services. Services are privately arranged in 4 municipalities, as well as in unincorporated areas of townships. Collection arrangements for commercial/institutional and industrial establishments throughout the county are privately arranged as well. Collection services for household refuse throughout most incorporated areas of the county are provided once a week. Collection may be less

frequent in the rural unincorporated areas within the county. All residents pay a flat rate for collection services (either directly or indirectly through the municipality's tax base) as opposed to a volume-based rate systems.

Transportation of Waste. After refuse is collected, it must be transported to a permitted disposal facility. The site at which DeKalb County waste is ultimately disposed generally depends on the hauler collecting the waste. The average haul distance from the point of collection to the point of disposal for DeKalb County general household waste is 14 miles, ranging from 2 miles to 23 miles, as depicted in Figure 6-1.

Waste Landfilled. The principal method of final waste disposal in DeKalb County is sanitary landfilling. Haulers serving DeKalb County primarily use the DeKalb County Landfill located in Cortland to dispose of the county's waste. This section will review the in-county landfill, waste imports, seasonality of waste landfilled, waste exports, the quantity of DeKalb County's waste landfilled and regional landfill capacity.

In-County Landfill. The DeKalb County Landfill, located in Cortland, is owned and operated by Waste Management Inc. (WMX). The landfill site accepts non-hazardous waste (municipal waste and industrial waste excluding special waste) and special waste. WMX indicates that a total of 79,208 tons of non-hazardous and special waste were disposed of in the landfill during 1992, consisting of 77,379 tons of non-hazardous waste and approximately 1,829 tons of special waste. It should be emphasized that municipal waste does not include special waste, and that special waste quantities are not used in municipal waste or total waste estimates. These quantities are mentioned only because they are being accepted at the in-county landfill.

Waste Imported Into DeKalb County. Of the 77,379 tons of non-hazardous waste accepted at the DeKalb County Landfill in 1992, approximately 92 percent, or 71,156 tons of non-hazardous waste originated from within DeKalb County. The remaining 8 percent, or approximately 6,223 tons of non-hazardous waste was imported into the landfill from communities bordering DeKalb County located in Kane, Kendall, LaSalle, Lee, McHenry and Ogle Counties. It should be noted, however, that the quantity of non-hazardous waste imported

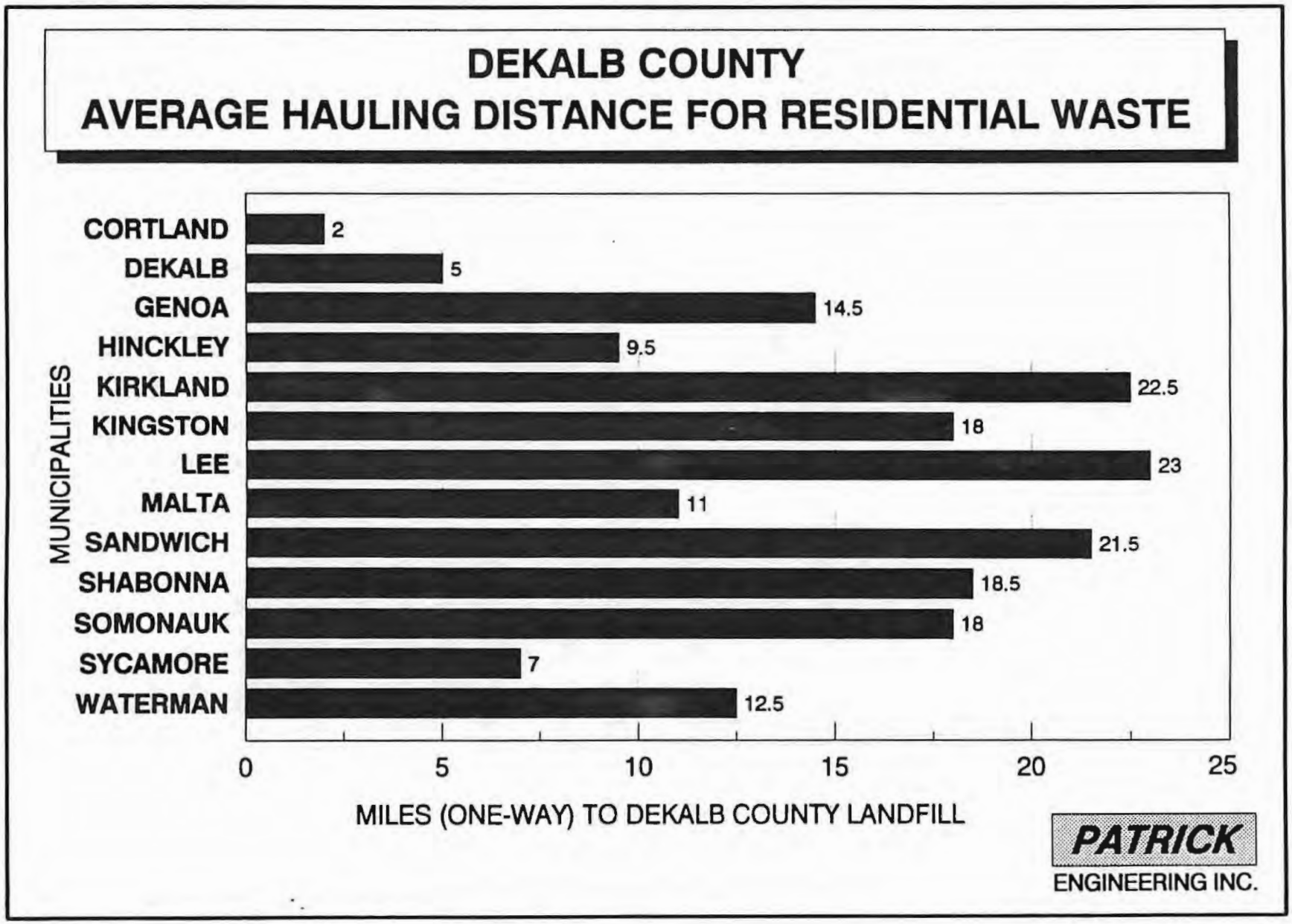
DEKALB COUNTY
AVERAGE HAULING DISTANCE FOR RESIDENTIAL WASTE
MUNICIPALITIES
CORTLAND
DEKALB
GENOA
HINCKLEY
KIRKLAND
KINGSTON
LEE
MALTA
SANDWICH
SHABONNA
SOMONAUK
SYCAMORE
WATERMAN
2
5
14.5
9.5
22.5
18
23
11
21.5
18.5
18
7
12.5
0
5
10
15
20
25
MILES (ONE-WAY) TO DEKALB COUNTY LANDFILL
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FIGURE 6-1

into the landfill has been declining. Reports from the landfill during the first three quarters of 1993 indicate that only six percent of the non-hazardous waste was imported into the landfill from communities located in counties bordering DeKalb County. Of the 1,829 tons of special waste accepted at the DeKalb County Landfill in 1992, approximately 85 percent, or 1,560 tons, of the special waste originated from within DeKalb County. The remaining 15 percent, or approximately 269 tons, was imported into the landfill from communities bordering DeKalb County. An overview of non-hazardous and special waste accepted at the DeKalb County Landfill during 1992 is presented in Table 6-2 and Figure 6-2.

TABLE 6-2. BREAKDOWN OF INCOMING WASTE ORIGIN AT THE DEKALB COUNTY LANDFILL

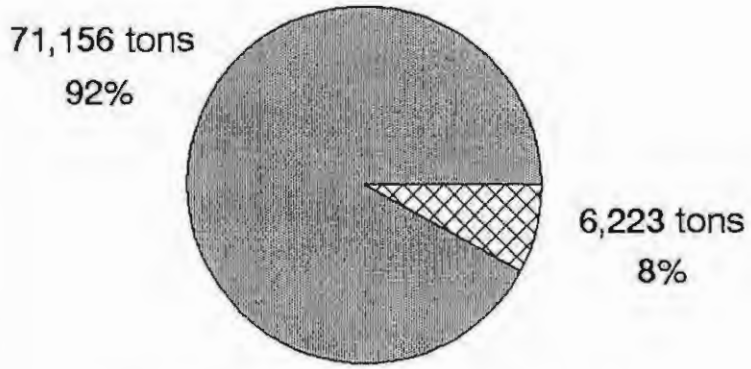
	NHW - IC	NHW - OOC	SP - IC	SP - OOC	TOTAL
Tons	71,156	6,223	1,560	269	79,208
Percentage	90%	8%	2%	<1%	100%

Key: **NHW** = non hazardous waste; **IC** = in county; **SP** = special waste; **OOC** = out of county.

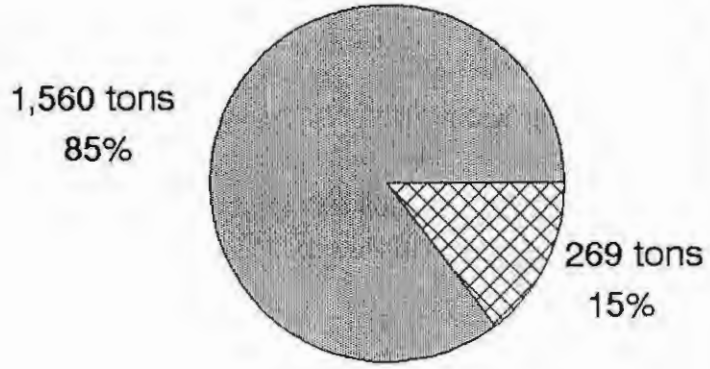
Seasonality of Waste Landfilled. To determine the seasonality of waste generation, the landfill operator, WMX, provided a monthly breakdown of incoming waste (including non-hazardous and special waste) in both tons and cubic yards, as shown in Figure 6-3 and Figure 6-4. In terms of tonnage, Figure 6-3 illustrates that the peak periods of waste generation of the year is spring and summer months, while the fall and winter months are the low waste generation periods of the year. In terms of volume (cubic yardage), Figure 6-4 illustrates that the peak periods of waste generation of the year is also spring and summer months, while the fall and winter months are the low waste generation periods of the year.

DeKalb County Waste Exported. The ultimate destination of waste generally depends on tipping fees, the distance between the community and the available disposal sites, and/or the hauler's association with the landfill operator. In some cases, it may be cheaper to transport the refuse further if the difference in tipping fees is great enough to justify an increase in transportation costs. Although most waste generated within DeKalb County is disposed of in DeKalb County, haulers indicated that small portions of waste generated within DeKalb County

DEKALB COUNTY LANDFILL INCOMING WASTE



NON-HAZARDOUS WASTE
77,379 TONS



SPECIAL WASTE
1,829 TONS

DEKALB COUNTY **BORDERING COUNTIES**

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FIGURE 6-2

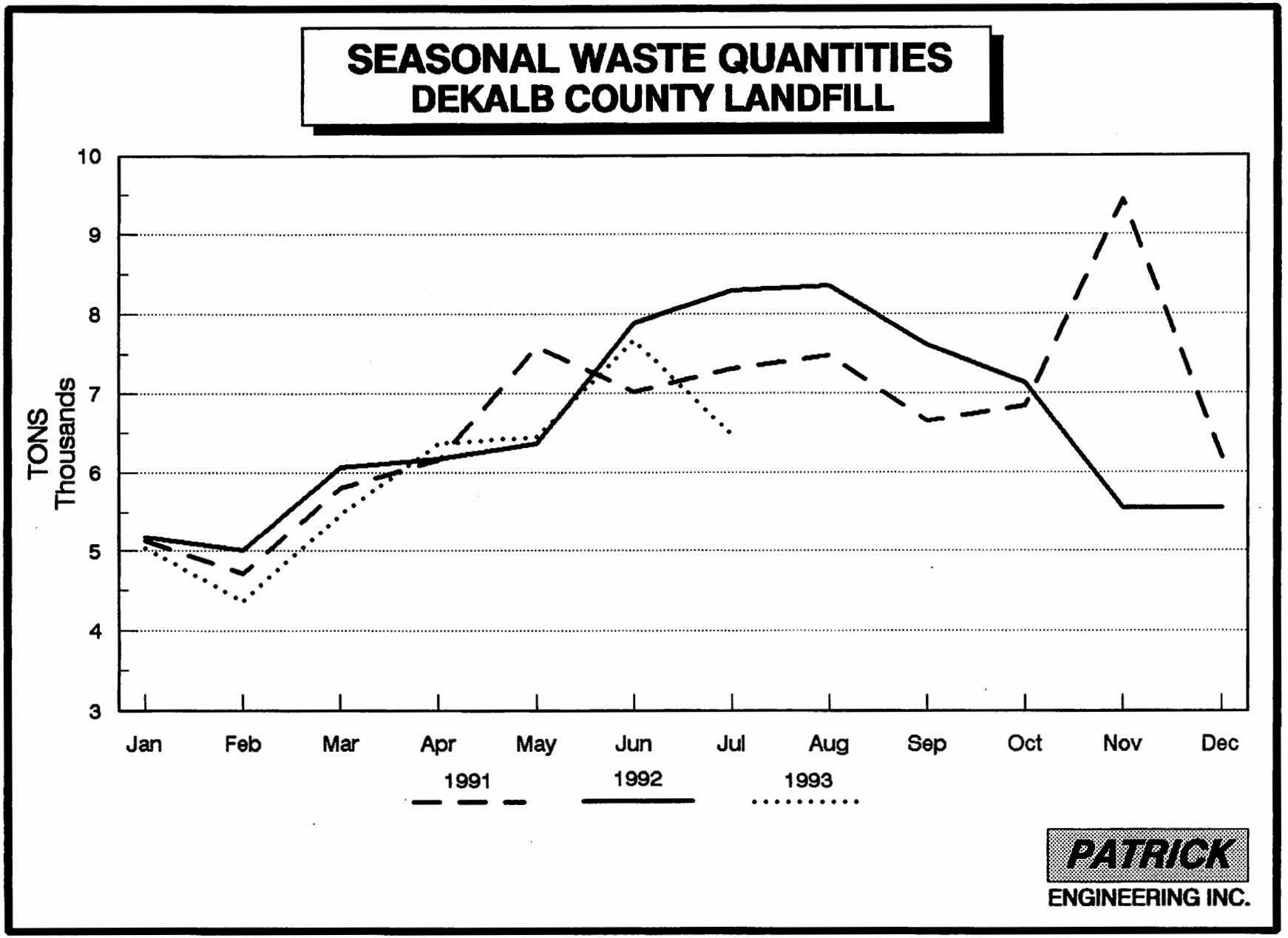
SEASONAL WASTE QUANTITIES
DEKALB COUNTY LANDFILL
TONS
Thousands
10
9
8
7
6
5
4
3
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
1991
1992
1993
PATRICK
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FIGURE 6-3

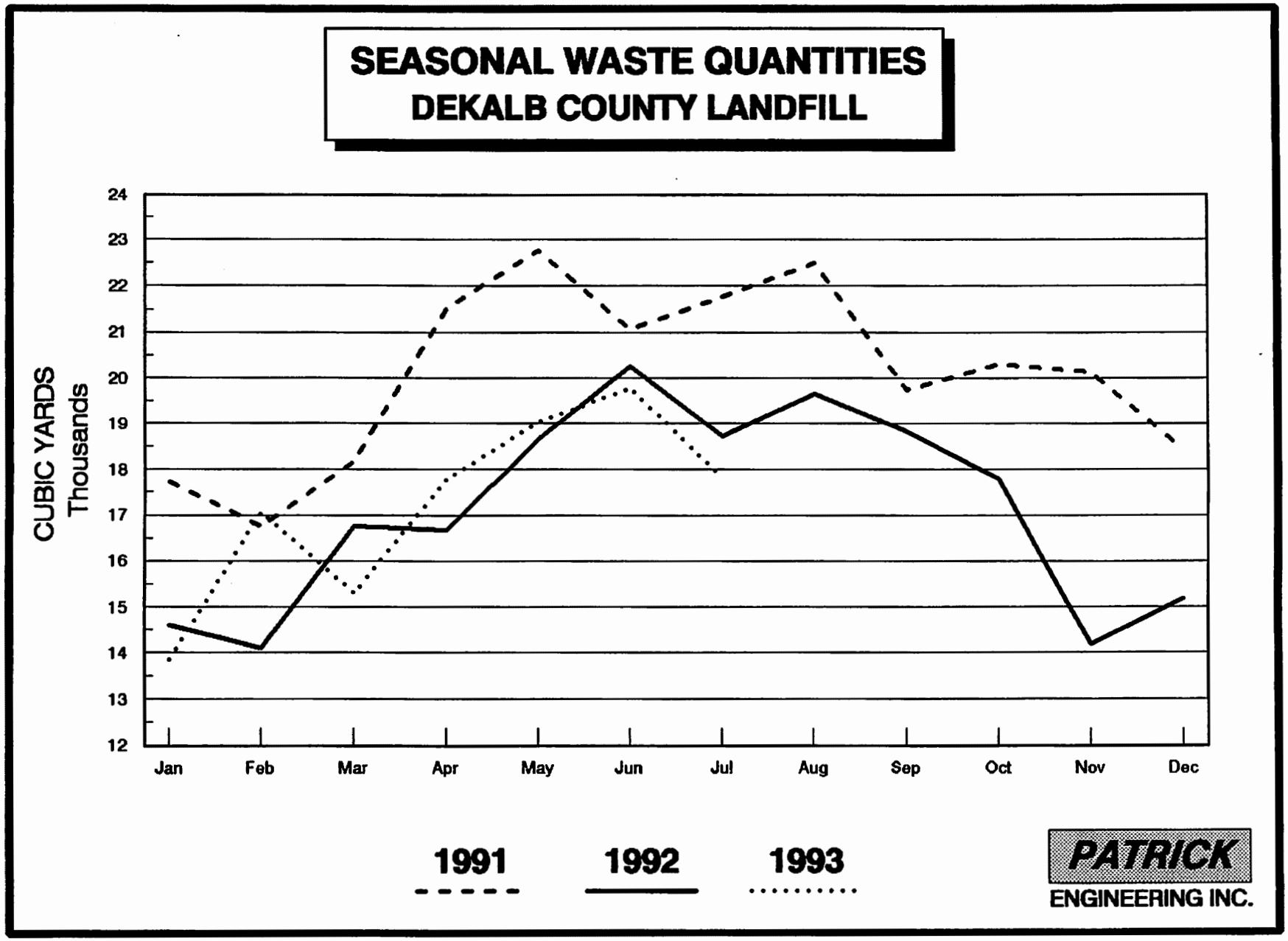
SEASONAL WASTE QUANTITIES
DEKALB COUNTY LANDFILL
CUBIC YARDS
Thousands
24
23
22
21
20
19
18
17
16
15
14
13
12
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
1991
1992
1993
PATRICK
ENGINEERING INC.

FIGURE 6-4

have been disposed of at the Davis Junction Landfill (Ogle County), Peru Municipal Landfill (LaSalle County), the Rochelle Municipal Landfill (Ogle County), the States Land Improvement Landfill (LaSalle County), the Winnebago Reclamation Landfill (Winnebago County) and the Woodland Landfill (Kane County). In most cases, out-of-county landfills are used for communities which border the county in which the landfill is located. It is estimated that 1,426 tons of non-hazardous waste will be exported from DeKalb County to out-of-county landfills during 1993, as depicted in Figure 6-5.

DeKalb County Waste Landfilled. Adding together the quantities of DeKalb County waste landfilled in-county and exported out-of-county, an estimated 72,582 tons of non-hazardous waste (or total waste) is expected to be landfilled in DeKalb County during 1993, as shown in Table 6-3. A complete analysis of landfill data, as shown in Table 6-4, indicates that municipal waste landfilled is estimated to be 58,977 TPY in 1993.

TABLE 6-3. LANDFILLS RECEIVING WASTE GENERATED IN DEKALB COUNTY

Landfill and Location	IC (Tons)	IC (%)	OOC (Tons)	OOC (%)	Total (Tons)	Total (%)
Davis Junction (BFI), Ogle County			17	1.2%	17	<0.1%
DeKalb County Landfill (WMX), DeKalb County	71,156	100%			71,156	98.0%
Morris Community Landfill, Grundy County			17	1.2%	17	<0.1%
Peru Municipal Landfill, LaSalle County			67	4.7%	67	0.1%
Rochelle Municipal Landfill, Ogle County			618	43.3%	618	0.9%
States Land Improvement, LaSalle County			253	17.7%	253	0.3%
Winnebago Reclamation, Winnebago County			225	15.8%	225	0.3%
Woodland Landfill (WMX), Kane County			229	16.1%	229	0.3%
TOTAL	71,156	98%	1,426	2%	72,582	100.0%

Key: **IC** = in county; **OOC** = out of county.

LANDFILLS SERVING DEKALB COUNTY

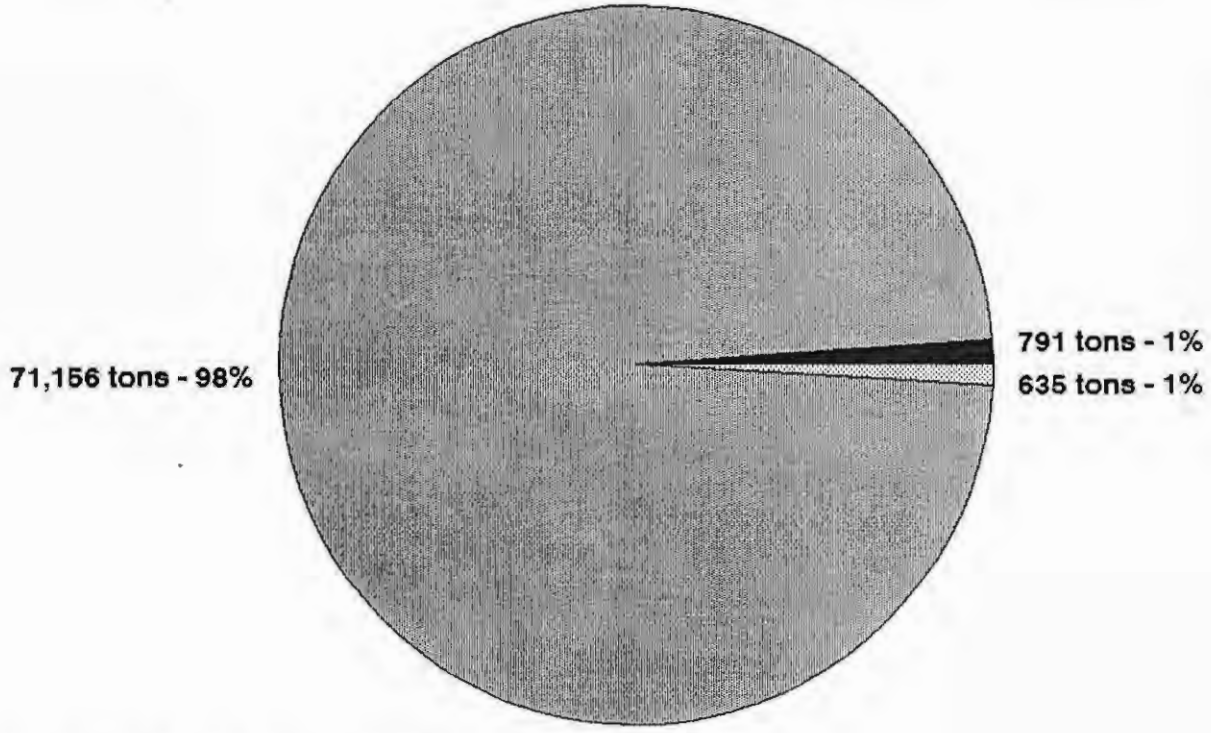

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FIGURE 6-5

TABLE 6-4. BREAKDOWN DEKALB COUNTY WASTE LANDFILLED							
	Res	Comm/Inst	Ind O/L	Ind	C/D	MW	TW
Tons	28,760	13,433	2,812	16,418	13,972	58,977	72,582
% of MW	49%	23%	5%		24%	100%	
% of TW	40%	19%		23%	19%		100%
Key: **GH:** general household waste; **COMM/INST:** commercial and institutional waste; **IND O/L:** industrial office and lunchroom waste; **IND:** industrial waste; **MW:** municipal waste; **TW:** total waste.							

Regional Landfill Disposal Capacity. Since the management and disposal of waste has regional implications, it is important to review landfill capacity throughout the DeKalb County region. The 1992 Illinois Environmental Protection Agency (IEPA) Available Disposal Capacity Report indicated that the DeKalb County Landfill had 4,674,908 cubic yards of remaining capacity for non-hazardous waste, corresponding to 18 years of disposal capacity at current disposal volumes. In other words, the report indicated that disposal capacity would be depleted by the year 2010. Records submitted by WMX in April 1993 to the IEPA for the 1993 Available Disposal Capacity Report indicate that the landfill has a remaining disposal capacity of 4,024,181 cubic yards. Using the calculated rate of 205,302 cubic yards disposed per year, the disposal capacity is expected to be depleted in 19.6 years, or by the year 2012, which is over two years more than reported in the 1992 IEPA disposal capacity report.

In terms of regionality, the Illinois Environmental Protection Agency (IEPA) identifies DeKalb County as being part of Region 1 in IEPA Available Disposal Capacity Report. Since DeKalb County actually borders Region 2. According the IEPA 1991 report, at current disposal volumes Regions 1 and 2 will exhaust landfill capacity between 1998 and 2003. The remaining disposal capacity as of 1992 for both regions is listed below.

Region 1 (Northwestern Illinois, including Boone, Bureau, Carroll, DeKalb, Jo Daviess, LaSalle, Lee, Ogle, Putnam, Stephenson, Whiteside, and Winnebago counties) landfill capacity is likely to be depleted between 2001 - 2003.

Region 2 (Chicago Metropolitan area, including Cook, DuPage, Grundy, Kane, Kankakee, Kendall, Lake, McHenry and Will counties) landfill capacity is likely to be exhausted between 1998 - 2000.

To determine a more local perspective of landfill capacity, landfills within the surrounding DeKalb County area were contacted for more detailed information. Figure 6-6 illustrates the location of landfills evaluated. Table 6-5 overviews the operations of these landfills, including the travelling distance, tipping fees, daily capacity, remaining capacity, years remaining and out-of-county restrictions. Using data from the individual facilities listed in the table, remaining disposal capacity ranges from 1 to 51 years at current disposal volumes.

Waste Incinerated. Surveys with haulers, municipal representatives and rural residents indicate that small quantities of refuse, if any, are disposed of by residents through incineration, as described in Chapter 4. According to IEPA incineration permit records, seventeen on-site incinerators are located within DeKalb County. Presently only three of these incinerators are reported to be in operation and used to incinerate municipal waste. Based on survey information from the operators of the incinerators, it is estimated that approximately 83 tons of commercial and institutional waste and 38 tons of industrial waste will be incinerated during 1993. None of the incineration occurring in DeKalb County is known to be used for energy recovery.

Waste Recycled. Several recycling opportunities currently exist within DeKalb County. Residential recycling opportunities are primarily available through curbside recycling collections and drop-off recycling centers. Many CII establishments have also instituted recycling programs. In addition, recycling is also present at Northern Illinois University and in several multi-family housing complexes.

DEKALB COUNTY AREA LANDFILLS

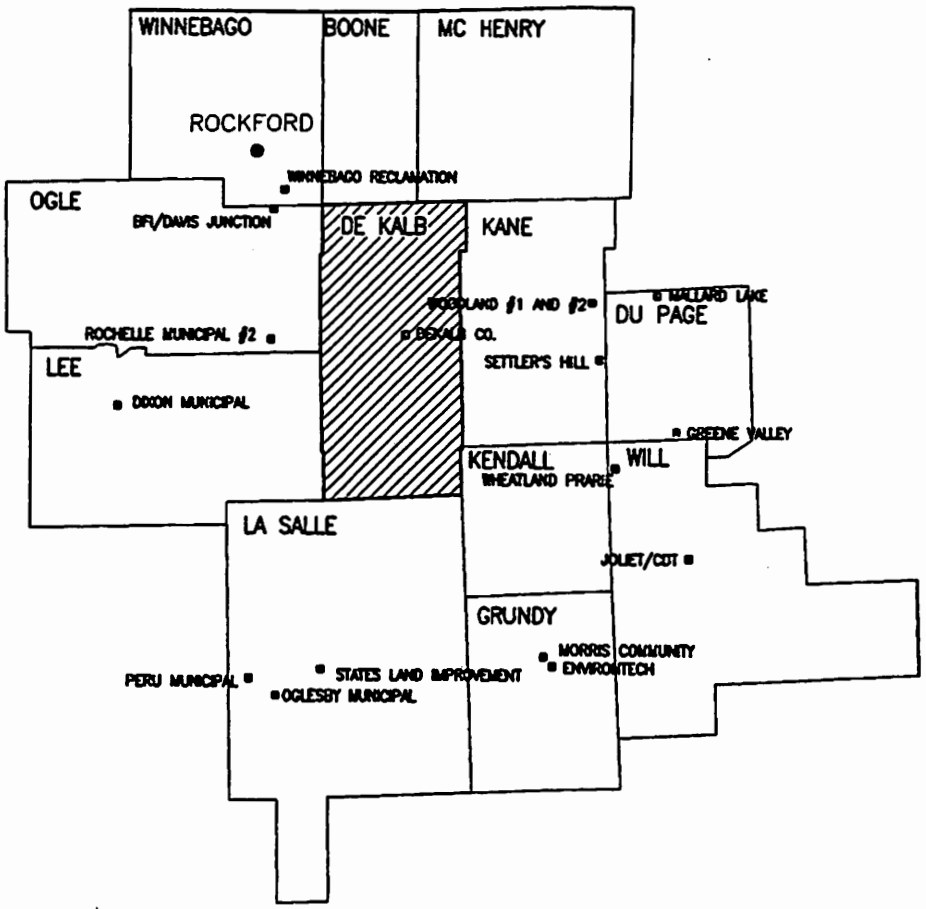

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FIGURE 6-6

TABLE 6-5. DEKALB COUNTY AREA DISPOSAL CAPACITY

Landfill & County Location	Own/Oper.[1]	Dist.[2]	Tipping Fee[3]	Cap.[4] (TPD)	Remaining Capacity[5]	Years Left[6]	Out-of-County Restrictions
CDT LF (Will)	PR/PR	47	$30.00 ton	501-1000	460,000	1992	NA
Community LF (Grundy)	PR/PR	40	$7.00 cy $8.00 ccy	101-500	686,400	1993	None
Davis Junction (Ogle)	PR/PR	21	$41.22 ton	501-1000	857,070	1994*	None
DeKalb County LF (DeKalb)	PR/PR	0	$8.55 cy	101-500	4,024,908	2013	No OOC accepted
Envirotech LF (Grundy)	PR/PR	40	$8.45 cy	26-100	1,978,282	1997	None
ESL LF (Will)	PR/PR	40		NA	390,153	1994	NA
Greene Valley LF (DuPage)	PB/PR	33	$9.15 cy	>1000	31,385,626	1997	NA
Mallard Lake LF (DuPage)	PB/PR	45	$8.10/cy	>1000	26,588,000	2001	NA
Oglesby Municipal LF (LaSalle)	PB/PB	50	$8.00 cy	NA	51,900	1999	NA
Peru Municipal LF (LaSalle)	PB/PB	50	$8.00 cy	26-100	277,702	1996	NA
Rochelle Municipal LF (Ogle)	PB/PB	15	$23.57/ton	101-500	2,117,138	2007*	NA
Settlers Hill LF (Kane)	PB/PR	24	$9.15 cy	>1000	22,233,417	2004*	None
States Land Impr. LF (LaSalle)	PR/PR	45	$7.50 cy	101-500	1,151,600	1999	None
Wheatland LF (Will)	PR/PR	36	$22.50/ton	NA	9,299,675	2011	Temporarily Closed
Winnebago Reclamation LF (Winnebago)	PR/PR	27	$53.00/ton	101-500	3,338,598	1999*	NA
Woodland LF (Kane)	PR/PR	24	$11.35 cy	>1000	14,547,526	1997	NA

Notes:
1. PR means private and PB means public.
2. The distance is estimated in road miles between the City of DeKalb and the disposal site.
3. The tipping fees are either in tons (T) or in loose cubic yards (CY).
4. Range of daily tons accepted.
5. Remaining gate capacity reported in cubic yards in 1991.
6. (Reported) last year of remaining capacity as of 1992. * indicates expansion is planned.
7. Out-Of-County (OOC) restrictions.

Sources: IEPA Available Disposal Capacity for Waste in Illinois, January 1993. Landfill Price Digest, March 1993.

Curbside Recycling Services. Single-family households in 11 of the 13 municipalities and various unincorporated areas within the County have residential curbside recycling collection services as of August 1993. As indicated in Table 6-1, residents either pay a separate monthly fee for the service or the service is included in the monthly refuse fee.

Table 6-6 summarizes the curbside recycling programs within the municipalities and unincorporated areas of DeKalb County. Of the estimated 20,343 single family households (1 - 4 attached units, not including vacancies) within DeKalb County, 13,223 households or 65 percent have curbside recycling service available to them. Most single-family households without curbside recycling service are located in the unincorporated areas of the County. The estimated participation rate of households that chose to participate in the recycling collections at least once a month ranges from 75 to 95 percent, based on hauler and municipal estimates. It should be mentioned that some manufactured dwellings (mobile homes, trailers, etc.) are also served by curbside recycling services.

In most of the curbside recycling programs, residents store materials in a 12 - 18 gallon with rectangular recycling bins provided by their hauler and set out materials weekly. Materials collected in curbside programs generally include newspaper, steel/bi-metal, aluminum, glass, PETE and HDPE plastic, although several programs in DeKalb County collect additional materials including corrugated cardboard, chipboard, high grade paper, mixed paper, magazines, #6 plastics, plastic rings and milk/juice cartons. Materials are mostly "commingled", meaning materials are minimally separated by the residents. The drivers of collection vehicles separate paper materials and non-paper materials while loading the vehicle. Once the recyclables are collected, the haulers may bring the materials back to a processing facility or to their yard for further processing and marketing. Local processors and/or markets of recyclable materials include the Waste Management - West (WMX/DCD) Processing Center and DIMCO. Based on estimates by haulers, it is estimated that 4,734 tons of general household waste will be recycled during 1993 in DeKalb County through curbside recycling programs.

Drop-Off Recycling Centers. Several types of drop-off recycling centers, as shown in Table 6-7, are available to DeKalb County residents, including full-service recycling enters, drop-boxes, buy-back centers and processors.

TABLE 6-6. DEKALB COUNTY CURBSIDE RECYCLING PROGRAM OVERVIEW

Community	SF HHLDs[1]	HHLDs w/ Curbside[2]	% HHLDs Part.	Materials Collected
Cortland	338	415	75%	ONP, CR, CP, HG, MP, MG, GL, AL, S/B, #1PL, #2PL, #6PL, #4RG, MJC
DeKalb	6,493	5,900	95%	ONP, CR, CP, HG, MP, MG, GL, AL, S/B, #1PL, #2PL, #6PL, #4RG, MJC
Genoa	1,018	1,080	90%	ONP, CR, CP, MG, GL, AL, S/B, #1PL, #2PL
Hinckley	599	650	90%	ONP, GL, AL, S/B, #1PL, #2PL
Kirkland	331	250	90%	ONP, GL, AL, S/B, #1PL, #2PL
Kingston	181	168	90%	ONP, GL, AL, S/B, #1PL, #2PL
Lee	46	100	%	
Malta	300	325	75%	ONP, CR, CP, HG, MP, MG, GL, AL, S/B, #1PL, #2PL, #6PL, #4RG, MJC
Sandwich	1,863	35	NA	NA
Shabbona	308	400	90%	ONP, GL, AL, S/B, #1PL, #2PL
Somonauk	378	to come		N\A
Sycamore	3,176	3,400	95%	ONP, CR, CP, HG, MP, MG, GL, AL, S/B, #1PL, #2PL, #6PL, #4RG, MJC
Waterman	358	450	90%	ONP, GL, AL, S/B, #1PL, #2PL
Incorp. Subtotal	15,391	13,173		Varies
Unincorp. Subtotal	4,954	50		Varies
Total	20,343	13,223		

Notes: 1. Haulers estimate of homes with curbside service available (homes with a recycling bin). The figure in parenthesis is the number of single family homes (1 - 4 units attached) in each municipality.
2. Haulers estimate of households which set out recyclables at least once a month

Key: *Materials:* **ONP**: Newspaper; **CR**: Corrugated cardboard; **MG**: Magazines; **HG**: High Grade Paper; **MP**: Mixed paper; **CP**: Chipboard; **SB**:Steel/Bi-Metal; **AL**: Aluminum; **GL**: Glass; **#1PL**: PETE Plastic; **#2PL**: HDPE Plastic; **#4RG**: plastic rings; **#6PL**: Polystyrene Plastic; **MJC**: Milk and juice cartons.

Source: Hauler Surveys, 1993. Municipal Surveys, 1993.

Full service recycling centers, such as the NIU Student Association (SA) Recycling Center, have attended staff hours, collect a wide range of materials and provide educational services. The SA Recycling Center, founded in 1975, is a non-profit student-run organization. The recycling center is responsible for operating a 24-hour drop-off recycling center for the community; collecting materials from administration buildings on campus; and providing weekly

curbside collection of the university's residence halls. Materials collected by the center include newspaper, computer paper, glass, aluminum, laser printer cartridges and mixed recyclables (including #1, #2 and #6 plastic containers, steel and bi-metal cans, and plastic rings). The center also provides various educational activities to students and businesses in the community in general.

TABLE 6-7. RECYCLING CENTERS IN THE DEKALB COUNTY AREA

Recycling Center	Hours	Type	Materials Collected
DeKalb County Landfill Somonauk Road Cortland, IL 758-6906	AT: M-F 7-3:30 2nd Sa/Mo 7-11 UN: Su-Sa 24hrs	DB	ONP, GL, AL, S/B, #1PL, #2PL
DeKalb Iron & Metal Co. 900 Oak Street DeKalb, IL 758-2458	AT: M-F 8-11:30 12:30-4 Sa 8-11:30	BB, PR	GL, AL, S/B, SM
NIU Student Association Recycling Center Northern Illinois University DeKalb, IL 753-9920	UN: Su - Sa 24hrs	FSRC	GL (clear), AL, S/B, NFM, FM, AB, WG
R & T Recycling P. O. Box 603 S. Goge Street Somonauk, IL 498-3749	AT: M-F 10-5 Sa 9-3	BB	AB, SM
WMX/DCD Processing Center 115 Simmonds Avenue DeKalb, IL 758-5209	AT: 8-5 UN: Su - Sa 24hrs	DB PR	ONP, CR, CP, HG, MP, MG, GL, AL, S/B, #1PL, #2PL, #6PL, #4RG, MJC

Key: *Type of Collection*: **DB**: drop-box; **FSRC**: full service recycling center; **BB**: buy-back center; **PR**: processor.

Materials: **ONP**: Newspaper; **CR**: Corrugated cardboard; **MG**: Magazines; **HG**: High Grade Paper; **MP**: Mixed paper; **CP**: Chipboard; **SB**:Steel/Bi-Metal; **AL**: Aluminum; **GL**: Glass; **#1PL**: PETE Plastic; **#2PL**: HDPE Plastic; **#4RG**: plastic rings; **#6PL**: Polystyrene Plastic; **MJC**: Milk and juice cartons; **SM**: Scrap Metal; **AB**: Automobile Batteries & Radiators; **WG**: White Goods; **NFM**: Non-ferrous metals.

Source: Recycling Center Surveys, 1993.

Drop-boxes refer to containers, generally unattended, which are placed for residents and/or businesses to deposit their recyclable materials. Drop-boxes are typically serviced by haulers. An example includes the drop box, sponsored by Waste Management in 1993, located at the DeKalb County Landfill. Buy-back centers are generally for-profit businesses willing to purchase aluminum, scrap metals and other higher valued materials from the public. Local buy-back centers include DeKalb Iron and Metal Company and R & T Recycling. An example of a processor of recyclables, which provides processing and marketing opportunities for recyclable materials, would be the Waste Management - West (WMX/DCD) Processing Center.

Table 6-7 overviews drop-off recycling center opportunities in DeKalb County. An estimated 1,960 tons of materials will be recycled at drop-off recycling centers located in DeKalb County during 1993.

Commercial/Institutional and Industrial Recycling. Many businesses and institutions within DeKalb County have incorporated recycling programs within their operations. In most cases, establishments either arrange their own markets for recyclable materials collected or contract with a recycling collection service. Commercial recycling services are generally provided by haulers or specialty recycling companies. Collection programs vary depending on the needs of each individual business. Materials commonly recycled in businesses include office paper, corrugated cardboard and other recyclable items commonly accepted in residential collection programs. Table 6-8 overviews some of the collection services offered by haulers available to DeKalb County establishments at this time. Based on hauler data, an estimated 7,863 tons of recyclable material will be collected from CII establishments during 1993. Commercial and institutional establishments which arrange their own markets indicate that an additional 466 tons of material will be recycled during 1993. Industrial establishments which arrange their own markets indicate that an additional 228 tons (of municipal waste recycling) material will be recycled during 1993. An estimated 12,952 tons (of non-municipal waste recycling) material is expected to be recycled in industrial establishments in 1993.

TABLE 6-8. DEKALB COUNTY COMMERCIAL RECYCLING SERVICES	
	Materials Potentially Collected[1]
BFI- Rockford	CR
WMX/DCD	HG, CR, ONP, GL, AL, SB, #1PL, #2PL

Notes: 1. Material collections may vary depending on the nature of the business.

Key: **ONP**: Newspaper; **CR**: Corrugated cardboard; **LG**: Low Grade Paper; **HG**: Office Paper; **S/B**: Steel/Bi-Metal; **AL**: Aluminum; **GL**: Glass; **#1PL**: PET Plastic; **#2PL**: HDPE Plastic; **#6PL**: Polystyrene.

Source: Hauler Surveys, 1993.

University Recycling. Currently, Northern Illinois University (NIU) and Kishwaukee College, both located in DeKalb County, have integrated internal recycling programs within their operations.

NIU's recycling program is serviced by the Student Association (SA) Recycling Center and by WMX/DCD. Materials collected by the SA Recycling Center include newspaper, computer paper, glass, aluminum, laser printer cartridges and mixed recyclables (including #1, #2 and #6 plastic containers, steel and bi-metal cans, and plastic rings). It is estimated that the center will recycled 223 tons of material during 1993. Since it is difficult to differentiate the amount of materials the center recycled from the university activities versus DeKalb residents, recyclable quantities from the center have been counted towards the "drop-off center recycling", as part of residential recycling. Therefore, recyclable quantities from the center are not included towards the university, as part of commercial/institutional recycling. WMX/DCD, which also collects various paper and non-paper recyclable materials, estimates that the university will recycle 1,739 tons during 1993 in addition to the SA Recycling Centers collection efforts.

Kishwaukee College's internal recycling program recycles materials including office paper, corrugated cardboard, aluminum cans, glass, motor oil, and metal scrap. The college also provides various educational services regarding recycling for the community. The quantity

of materials collected from this program were included in the hauler's CII establishment recycling estimates.

The University Recycling Act requires NIU and Kishwaukee College to develop comprehensive waste reduction plans by January 1, 1995. The plans must be designed to achieve 40 percent reduction of waste landfilled by January 1, 2000. These plans will provide a more detailed description of each university's recycling initiatives.

Multi-Family Recycling. The City of DeKalb sponsors 7 multi-family recycling drop-boxes to encourage recycling at multi-family housing complexes, as shown in Table 6-9. The multi-family housing complexes primarily house university students. The hauler servicing the drop-boxes, WMX/DCD, estimates that 1,248 tons of recyclable material will be collected during 1993. Since multi-family recycling dumpsters are serviced by haulers on their commercial/institutional routes, and it would be difficult for haulers to determine multi-family recyclable quantities independent of other commercial/institutional quantities, multi-family recyclable quantities are counted towards commercial/institutional recycling quantities (the same pertains to multi-family refuse as well).

Waste Composted and Land-Applied. DeKalb County residents and CII establishments typically manage landscape waste through two methods: 1) backyard management through composting, mulching or burning or 2) public management through discarding the material for collection and recycling by either haulers or Public Works Departments. Municipal and hauler representatives indicate that backyard management of landscape waste is more common in the rural areas of the county. It is difficult to determine the quantity of landscape waste source reduced through backyard management methods of residents. It is more common for landscape waste to be discarded by residents for hauler or Public Works collection in the incorporated areas of the county. In most cases where landscape waste is collected, haulers take the landscape waste to a landscape waste facility for composting. Most Public Works Departments indicated that they deliver waste to a landscape waste facility or burn the materials for disposal. The quantities of landscape waste burned are not considered composted or land applied and therefore are not included in recycling totals.

TABLE 6-9. MULTI-FAMILY RECYCLING IN THE DEKALB COUNTY AREA

Recycling Center	Hours	Materials Collected
City of DeKalb Hillcrest Apartments James Court Lincolnshire West Spruce Hill University Village Varsity Square West Ridge	UN: Su-Sa 24hrs	ONP, CR, CP, HG, MP, MG, GL, AL, S/B, #1PL, #2PL, #6PL, #4RG, MJC

Key: *Materials:* **ONP**: Newspaper; **CR**: Corrugated cardboard; **MG**: Magazines; **HG**: High Grade Paper; **MP**: Mixed paper; **CP**: Chipboard; **SB**:Steel/Bi-Metal; **AL**: Aluminum; **GL**: Glass; **PL**: PETE Plastic; **#2PL**: HDPE Plastic; **#4RG**: plastic rings; **#6PL**: Polystyrene Plastic; **MJC**: Milk and juice cartons.

Source: Recycling Center Surveys, 1993.

DeKalb County Disposal (DCD), recently acquired by Waste Management - West, operated a landscape waste facility until 1993, where a large portion of the County's landscape waste was composted. Based on estimates from DCD and the City of DeKalb Public Works Department, an estimated 7,606 tons of residential landscape waste were composted at DCD's landscape facility in 1992. Most landscape waste discarded from DeKalb County is presently managed at the DeKalb County Landscape Waste Facility located at the landfill in Cortland. The facility, operated by Waste Management, provides an outlet for composting landscape waste for many other communities in Northern Illinois as well. Based on estimates from the DeKalb County Landscape Waste Facility and other haulers collecting landscape waste, an additional 566 tons of general household and 404 tons of commercial/institutional landscape waste was composted in 1992. Based on data from haulers and landscape waste facilities, it is estimated that DeKalb County residents will discard an estimated 8,172 tons and businesses will discard an estimated 404 tons of landscape waste for collection and composting during 1993.

The DeKalb County Landscape Waste Facility accepted approximately 5,703 tons, or 13,304 cubic yards, of landscape waste in 1992. Of this amount, approximately 312 tons, or 5.5 percent, originated from DeKalb County (mostly from a local hauler and cash or general contractor accounts). Projections of incoming landscape waste at the facility suggest that over 61,000 cubic yards, or approximately 26,180 tons of landscape waste will be composted at the facility in 1993. Due to the relatively few landscape waste facilities located in Northern Illinois,

the DeKalb facility has been accepting increasing volumes of landscape waste from out-of-county.

Total Recycled. In total, it is estimated that 26,814 tons of municipal waste will be recycled in DeKalb County during 1993. Including industrial recycling, a total of 39,766 tons of total waste is expected to be recycled in DeKalb County during 1993. A breakdown of recycling quantities is provided in Table 6-10 and a complete breakdown of municipal waste recycling is depicted in Figure 6-7.

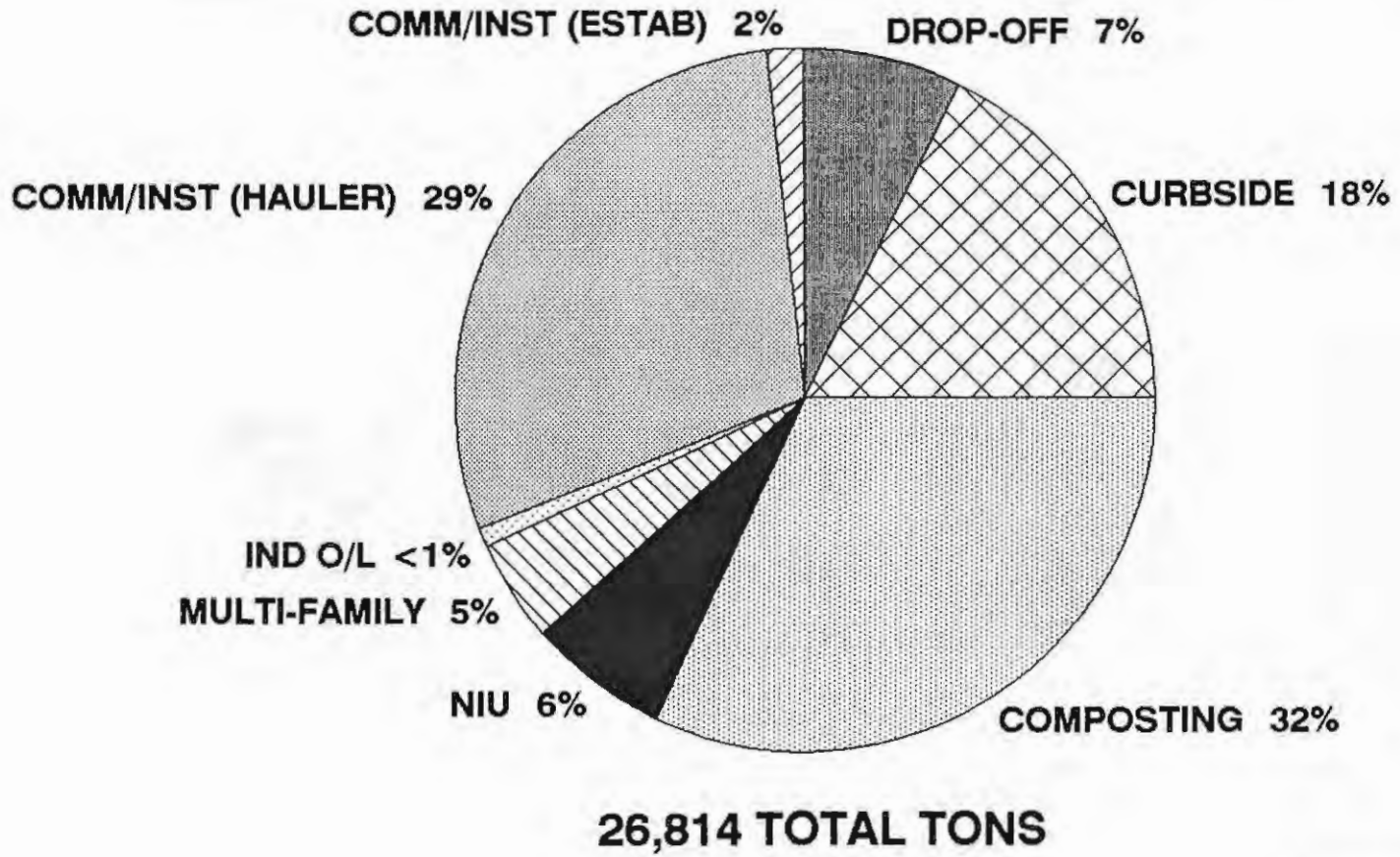
TABLE 6-10. BREAKDOWN DEKALB COUNTY WASTE RECYCLED

	GH	Comm/Inst	Ind O/L	Ind	C/D	MW	TW
Tons	14,866	11,720	228	12,952	0	26,814	39,766
% of MW	55%	44%	<1%		0%	100%	
% of TW	37%	29%	<1%	33%	0%		100%

Key: **GH:** general household waste; **COMM/INST:** commercial and institutional waste; **IND O/L:** industrial office and lunchroom waste; **IND:** industrial waste; **MW:** municipal waste; **TW:** total waste.

Summary of the Municipal Waste Management System. A summary of DeKalb County's municipal waste management system is presented in Table 6-11 and Figure 6-8. It is estimated that 85,874 tons of municipal waste will be generated in DeKalb County. Using the IEPA interpretation of recycling, the data indicates that DeKalb County will recycle approximately 31 percent of its municipal waste during 1993 (18,238 tons recycled + 8,576 tons composted / 85,874 tons of municipal waste generated). Based on current data, DeKalb County is exceeding the State's recycling goals of 15 percent within three years and 25 percent within five years of implementation. Figure 6-9 identifies locations of various waste management facilities and programs located within DeKalb County.

DEKALB COUNTY RECYCLING BREAKDOWN



26,814 TOTAL TONS

Note: Percentages do not equal 100% due to rounding.

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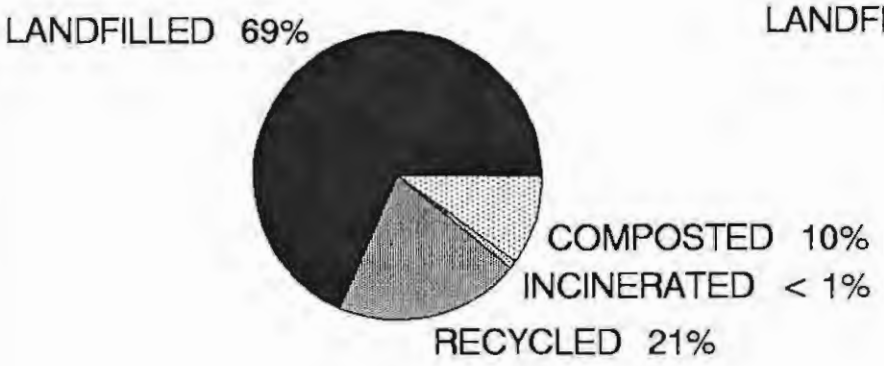
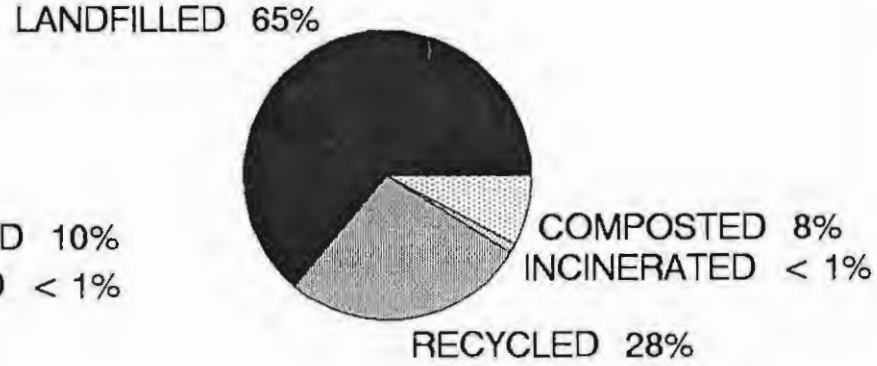
FIGURE 6-7

DEKALB COUNTY WASTE MANAGEMENT SYSTEM



MUNICIPAL WASTE
85,308 TONS



TOTAL WASTE
111,903 TONS

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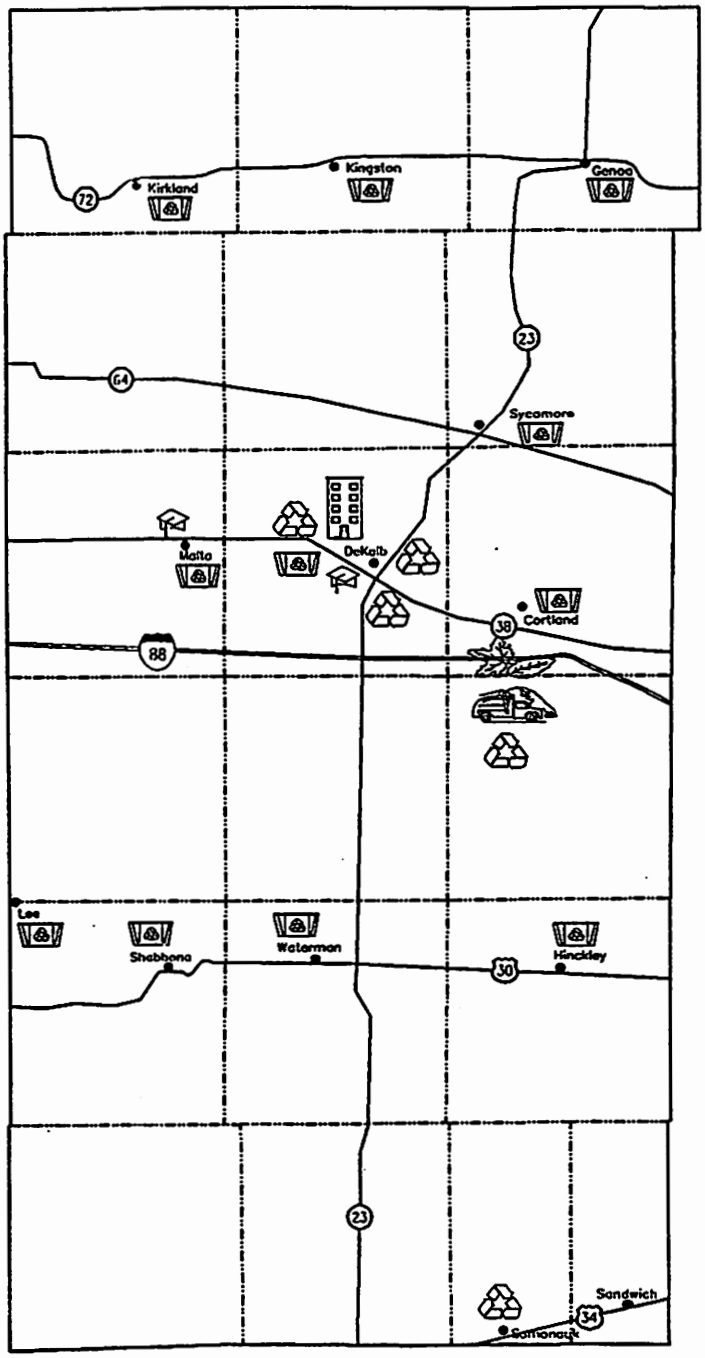
FIGURE 6-8

DEKALB COUNTY WASTE MANAGEMENT FACILITIES



KEY

- ACCESS HIGHWAYS
- PRINCIPAL HIGHWAYS
- ROADS
- MUNICIPALITIES
- MULTI-FAMILY RECYCLING
- CURBSIDE PROGRAM
- UNIVERSITY RECYCLING
- LANDFILL
- LANDSCAPE WASTE FACILITY
- DROP-OFF CENTER

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FIGURE 6-9

TABLE 6-11. ESTIMATED DEKALB COUNTY MUNICIPAL WASTE MANAGEMENT BREAKDOWN (TPY)					
	GH (TPY)	COMM/INST (TPY)	IND O/L (TPY)	C/D (TPY)	MW (TPY)
Landfilled	28,760	13,433	2,812	13,972	58,977
Incinerated	0	83	0	0	83
Recycled	6,694	11,316	228	0	18,238
Composted/Land-Applied	8,172	404	0	0	8,576
TOTAL	43,626	25,236	3,040	13,972	85,874
Key: **GH**: general household waste; **COMM/INST**: commercial and institutional waste; **IND O/L**: industrial office and lunchroom waste; **MW**: municipal waste.					

Summary of the Total Waste Management System. A summary of DeKalb County's total waste management system is presented in Table 6-12 and Figure 6-8. It is estimated that DeKalb County will generate 111,903 tons of total waste during 1993.

TABLE 6-12. ESTIMATED DEKALB COUNTY TOTAL WASTE MANAGEMENT BREAKDOWN (TPY)					
	GH (TPY)	COMM/INST (TPY)	IND (TPY)	C/D (TPY)	TW (TPY)
Landfilled	28,760	13,433	16,418	13,972	72,582
Incinerated	0	83	38	0	121
Recycled	6,694	11,316	13,180	0	31,190
Composted/Land-Applied	8,172	404	0	0	8,576
TOTAL	43,626	25,236	29,635	13,972	112,469
Key: **GH**: general household waste; **COMM/INST**: commercial and institutional waste; **IND O/L**: industrial office and lunchroom waste; **MW**: municipal waste.					

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CHAPTER SEVEN
WASTE QUANTITY PROJECTIONS

This chapter presents DeKalb County waste generation projections for the planning period 1990-2015. Since population and employment are the primary variables affecting solid waste generation, it was judged to be useful to base waste quantity projections on different sets of population and employment projections for DeKalb County. The projections presented in this chapter are based on the demographic trends described in Chapter 3.

Three scenarios are presented based on: 1) Illinois Bureau of the Budget's (IBOB) population forecasts and Illinois Department of Employment Security's (IDES) employment forecasts; 2) Woods and Poole's 1990 population and 1990 employment forecasts; and 3) DeKalb County Economic Development Corporation (EDC) 1990 population and 1990 employment forecasts. Population and employment estimates are based on 1990 estimates from each demographic forecasting source, since the best population and employment forecasting data is available for 1990. The base year for the waste quantities in this report is 1993, since this is the year the waste generation rates were derived. The waste quantity projections do not assume that per capita and per employee waste generation rates will increase over time. The scenario which is determined to most appropriately represent DeKalb County will be selected during Phase Two with the advice and consent of the Citizens Advisory Committee.

Scenario One. Table 7-1 presents projections of waste generation for 1993 to 2015 based on IBOB population estimates and IDES employment estimates. The projections are based on the following assumptions: 1) general household waste generation is assumed to vary proportionally with population change; 2) commercial/institutional (C/I) waste generation is assumed to vary proportionally with the change in employment levels; 3) industrial office and lunchroom waste generation is assumed to vary proportionally with the change in employment levels; 4) industrial waste generation is assumed to vary proportionally with the change in employment levels; and 5) construction/demolition (C/D) waste generation is assumed to vary proportionally with the change in population levels. Municipal waste is defined to include general household waste, C/I waste, industrial office and lunchroom waste and C/D debris.

Total waste is defined to include general household waste, C/I waste, industrial waste and C/D waste. Waste generation projections for each waste management method are based on the breakdown of waste management methods expected to occur in 1993.

TABLE 7-1. SCENARIO ONE: IBOB/IDES WASTE PROJECTIONS (1993 - 2015), TONS

	1993	1995	2005	2015
Demographic Predictor				
Population	76,735	76,390	77,899	79,737
Employment	31,976	32,475	33,780	35,171
Waste Type				
Residential	43,060	42,866	43,713	44,745
Landfilled	*28,760*	*28,631*	*29,197*	*29,886*
Incinerated	*0*	*0*	*0*	*0*
Recycled	*6,694*	*6,663*	*6,795*	*6,955*
Composted	*7,606*	*7,572*	*7,721*	*7,904*
Comm./Inst.	25,236	25,630	26,660	27,757
Landfilled	*13,433*	*13,642*	*14,191*	*14,775*
Incinerated	*83*	*84*	*88*	*91*
Recycled	*11,316*	*11,493*	*11,954*	*12,447*
Composted	*404*	*410*	*427*	*444*
Ind. O/L	3,040	3,088	3,212	3,344
Landfilled	*2,812*	*2,856*	*2,971*	*3,093*
Incinerated	*0*	*0*	*0*	*0*
Recycled	*228*	*232*	*241*	*251*
Composted	*0*	*0*	*0*	*0*
Industrial	29,635	30,098	31,307	32,596
Landfilled	*16,418*	*16,674*	*17,344*	*18,058*
Incinerated	*38*	*38*	*40*	*41*
Recycled	*13,180*	*13,386*	*13,924*	*14,497*
Composted	*0*	*0*	*0*	*0*
C/D	13,972	13,909	14,183	14,518
Landfilled	*13,972*	*13,909*	*14,183*	*14,518*
Incinerated	*0*	*0*	*0*	*0*
Recycled	*0*	*0*	*0*	*0*
Composted	*0*	*0*	*0*	*0*
Municipal Waste	85,308	85,492	87,768	90,364
Landfilled	*58,977*	*59,038*	*60,542*	*62,272*
Incinerated	*83*	*84*	*88*	*91*
Recycled	*18,238*	*18,388*	*18,990*	*19,653*
Composted	*8,010*	*7,982*	*8,148*	*8,348*
Total Waste	111,903	112,502	115,863	119,616
Landfilled	*72,582*	*72,856*	*74,915*	*77,237*
Incinerated	*121*	*123*	*127*	*133*
Recycled	*31,190*	*31,542*	*32,673*	*33,899*
Composted	*8,010*	*7,982*	*8,148*	*8,348*

Sources: Illinois Bureau of the Budget, 1988 and 1990.
Illinois Department of Employment Security, 1988.

Scenario Two. Table 7-2 presents projections of waste generation for 1993 to 2015 based on Woods and Poole's population and employment estimates. The assumptions for Table 7-2 are the same as for Table 7-1 in all other respects.

TABLE 7-2. SCENARIO TWO: WOODS & POOLE WASTE PROJECTIONS (1993 - 2015), TONS

	1993	1995	2005	2015
Demographic Predictor				
Population	78,050	78,290	79,220	79,860
Employment	37,450	37,750	38,350	37,860
Waste Type				
Residential	43,060	43,192	43,705	44,059
Landfilled	*28,760*	*28,849*	*29,192*	*29,427*
Incinerated	*0*	*0*	*0*	*0*
Recycled	*6,694*	*6,714*	*6,794*	*6,849*
Composted	*7,606*	*7,629*	*7,720*	*7,782*
Comm./Inst.	25,236	25,438	25,842	25,512
Landfilled	*13,433*	*13,540*	*13,756*	*13,580*
Incinerated	*83*	*84*	*85*	*84*
Recycled	*11,316*	*11,407*	*11,588*	*11,440*
Composted	*404*	*407*	*414*	*408*
Ind. O/L	3,040	3,065	3,113	3,074
Landfilled	*2,812*	*2,835*	*2,880*	*2,843*
Incinerated	*0*	*0*	*0*	*0*
Recycled	*228*	*230*	*234*	*231*
Composted	*0*	*0*	*0*	*0*
Industrial	29,635	29,873	30,348	29,960
Landfilled	*16,418*	*16,549*	*16,812*	*16,598*
Incinerated	*38*	*38*	*38*	*38*
Recycled	*13,180*	*13,286*	*13,497*	*13,324*
Composted	*0*	*0*	*0*	*0*
C/D	13,972	14,015	14,181	14,296
Landfilled	*13,972*	*14,015*	*14,181*	*14,296*
Incinerated	*0*	*0*	*0*	*0*
Recycled	*0*	*0*	*0*	*0*
Composted	*0*	*0*	*0*	*0*
Municipal Waste	85,308	85,709	86,842	86,940
Landfilled	*58,977*	*59,238*	*60,008*	*60,146*
Incinerated	*83*	*84*	*85*	*84*
Recycled	*18,238*	*18,351*	*18,615*	*18,519*
Composted	*8,010*	*8,037*	*8,134*	*8,191*
Total Waste	111,903	112,517	114,076	113,826
Landfilled	*72,582*	*72,953*	*73,940*	*73,900*
Incinerated	*121*	*122*	*124*	*122*
Recycled	*31,190*	*31,406*	*31,879*	*31,613*
Composted	*8,010*	*8,037*	*8,134*	*8,191*

Source: Woods and Poole, 1992

Scenario Three. Table 7-3 presents projections of waste generation for 1993 to 2015 based on DeKalb County EDC population and employment estimates. The assumptions for Table 7-3 are the same as for Table 7-1 in all other respects.

TABLE 7-3. SCENARIO THREE: DEKALB COUNTY EDC WASTE PROJECTIONS (1993 - 2015), TONS

	1993	1995	2005	2015
Demographic Predictor				
Population	77,932	84,577	95,949	113,150
Employment	31,976	34,273	38,870	43,383
Waste Type				
Residential	43,626	47,346	53,712	63,341
Landfilled	*28,760*	*31,213*	*35,410*	*41,757*
Incinerated	*0*	*0*	*0*	*0*
Recycled	*6,694*	*7,264*	*8,241*	*9,718*
Composted	*8,172*	8,869	*10,061*	*11,865*
Comm./Inst.	25,236	27,049	30,677	34,238
Landfilled	*13,433*	*14,398*	*16,329*	*18,225*
Incinerated	*83*	*89*	*101*	*113*
Recycled	*11,316*	*12,129*	*13,756*	*15,353*
Composted	*404*	*433*	*491*	*548*
Ind. O/L	3,040	3,259	3,696	4,125
Landfilled	*2,812*	*3,014*	*3,419*	*3,816*
Incinerated	*0*	*0*	*0*	*0*
Recycled	*228*	*244*	*277*	*309*
Composted	*0*	*0*	*0*	*0*
Industrial	29,635	31,764	36,025	40,207
Landfilled	*16,418*	*17,597*	*19,958*	*22,275*
Incinerated	*38*	*40*	*46*	*51*
Recycled	*13,180*	*14,127*	*16,022*	*17,882*
Composted	*0*	*0*	*0*	*0*
C/D	13,972	15,163	17,202	20,285
Landfilled	*13,972*	*15,163*	*17,202*	*20,285*
Incinerated	*0*	*0*	*0*	*0*
Recycled	*0*	*0*	*0*	*0*
Composted	*0*	*0*	*0*	*0*
Municipal Waste	85,874	92,816	105,286	121,989
Landfilled	*58,977*	*63,788*	*72,358*	*84,083*
Incinerated	*83*	*89*	*101*	*113*
Recycled	*18,238*	*19,638*	*22,274*	*25,380*
Composted	*8,576*	9,302	*10,552*	*12,413*
Total Waste	112,469	121,321	137,615	158,072
Landfilled	*72,582*	*78,370*	*88,897*	*102,542*
Incinerated	*121*	*129*	*147*	*164*
Recycled	*31,190*	*33,520*	*38,018*	*42,953*
Composted	*8,576*	9,302	*10,552*	*12,413*

Source: DeKalb County Economic Development Commission.

Summary of Scenarios. The three scenarios for DeKalb County's municipal waste generation are summarized in Table 7-4 and depicted in Figure 7-1. Municipal waste in DeKalb County is expected to increase within 0.9 to 1.6 percent per year between 1993 and 2015 based on demographic factors alone. The three scenarios for DeKalb County's total waste generation are summarized in Table 7-5 and depicted in Figure 7-2. Total waste in DeKalb County is expected to increase within 0.08 to 1.6 percent per year between 1993 and 2015 based on demographic factors alone.

TABLE 7-4. SUMMARY OF DEKALB COUNTY ANNUAL MUNICIPAL WASTE PROJECTIONS, TONS (1993 - 2015)

	1993	1995	2005	2015	% Annual Change 1993-2015
Scenario 1	85,874	86,056	88,343	90,952	0.26%
Scenario 2	85,874	86,277	87,416	87,519	0.09%
Scenario 3	85,874	92,816	105,286	121,989	1.6%

TABLE 7-5. SUMMARY OF DEKALB COUNTY ANNUAL TOTAL WASTE PROJECTIONS, TONS (1993 - 2015)

	1993	1995	2005	2015	% Annual Change 1993-2015
Scenario 1	112,469	113,066	116,438	120,205	0.30%
Scenario 2	112,469	113,085	114,651	114,405	0.08%
Scenario 3	112,469	121,321	137,615	158,072	1.6%

In order to convert estimates from tons to cubic yards for the projections presented in this chapter, the following conversions may be used:

Conversions:

1 cubic yard	=	800 pounds
1 ton	=	2000 pounds

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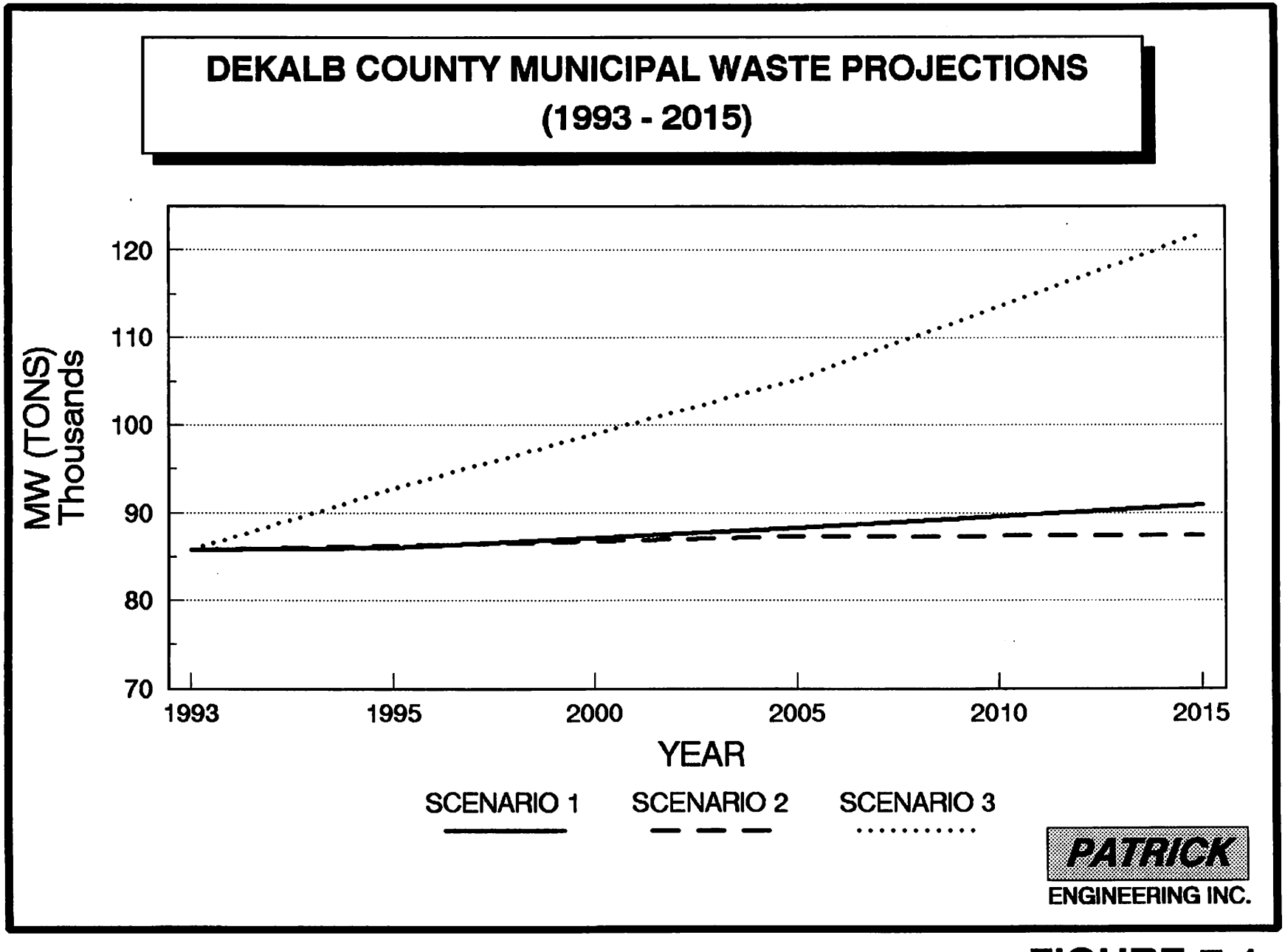
DEKALB COUNTY MUNICIPAL WASTE PROJECTIONS
(1993 - 2015)
MW (TONS)
Thousands
120
110
100
90
80
70
1993
1995
2000
2005
2010
2015
YEAR
SCENARIO 1
SCENARIO 2
SCENARIO 3
PATRICK
ENGINEERING INC.

FIGURE 7-1

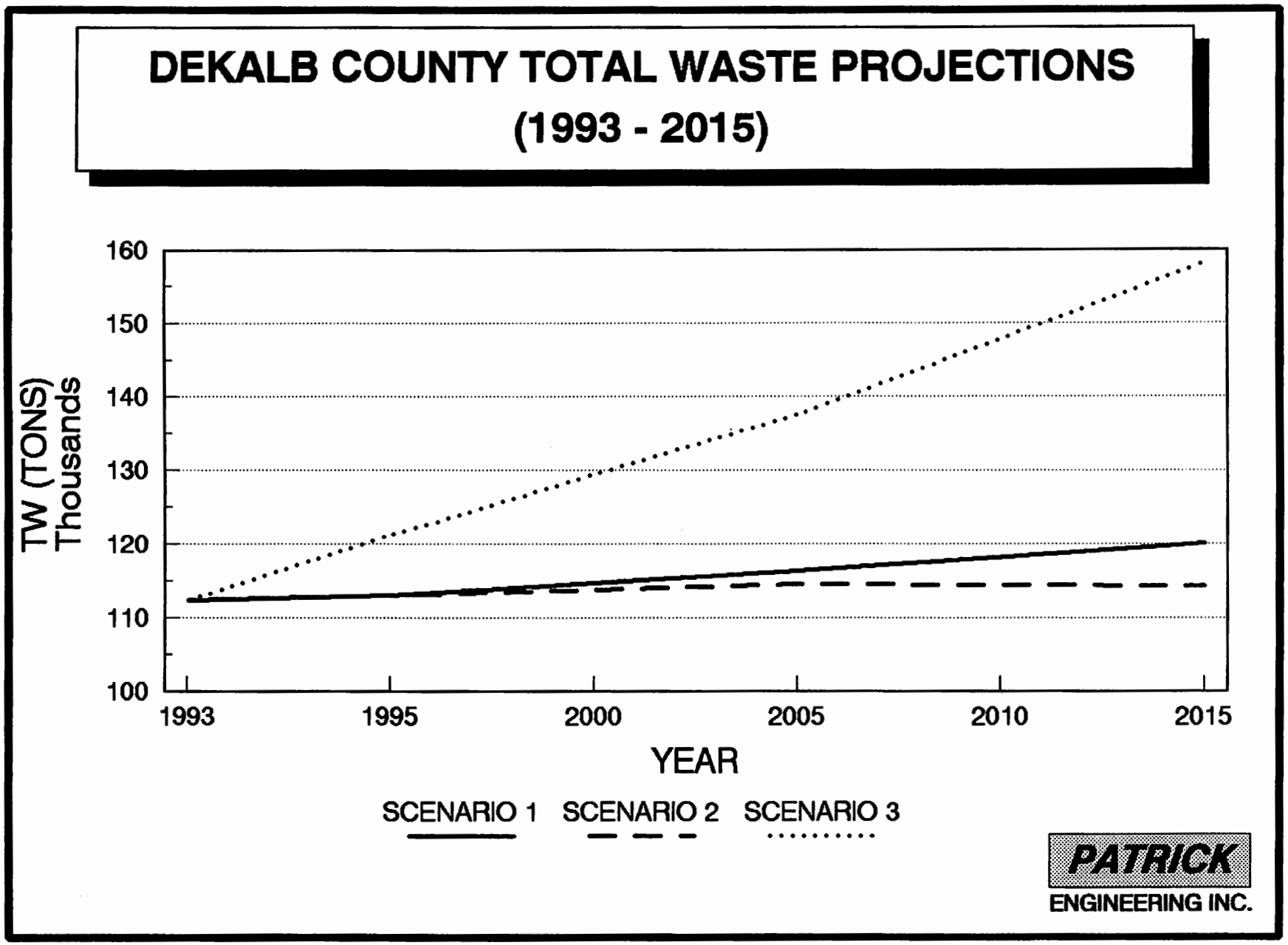
DEKALB COUNTY TOTAL WASTE PROJECTIONS
(1993 - 2015)
TW (TONS)
Thousands
160
150
140
130
120
110
100
1993
1995
2000
2005
2010
2015
YEAR
SCENARIO 1
SCENARIO 2
SCENARIO 3
PATRICK
ENGINEERING INC.

FIGURE 7-2

CHAPTER EIGHT
WASTE MANAGEMENT ISSUES

The solid waste industry, and the environmental arena as a whole, are marked by dynamic change and increasing complexity. Many variables may affect the current and future generation and management of DeKalb County's municipal waste and total waste. The following issues are likely to have the most impact on the future generation and management of DeKalb County's waste. These issues will continue to be examined during the development of the Waste Management Plan and addressed in the five year update planning intervals after implementation of the plan.

Changes in the Waste Management System. The data reported within this document is based on the existing waste management system. If any of the variables within this system significantly change, it will be necessary to make adjustments to this assessment. One such development would include Northern Illinois University's upcoming feasibility study and strategic plan concerning the university's on-site incinerators. If NIU decides to introduce incineration as a disposal option, it is likely that the distribution of DeKalb County's waste landfilled and incinerated will shift.

Future waste legislation may have an impact on the management of the County's waste. The Solid Waste Planning and Recycling Act, for instance, requires counties to develop waste plans with recycling programs designed to recycle 15 percent of the municipal waste stream within three years and 25 percent within five years of implementation of the plan. Additional recycling efforts could cause the quantity of waste landfilled to decrease. As another example, the ban on the landfilling of landscape waste which went into effect on July, 1990, has reduced the percentage of landscape waste which is landfilled and has increased the percentage of landscape waste composted.

Regional Disposal Capacity. Many regions in Illinois, and the Midwest in general, are confronted with a waste disposal dilemma. Many counties do not have a landfill located within their boundaries; several counties which have landfills located within their boundaries do not

generate enough waste to cost-effectively maintain the landfill. For this reason, the disposal system in Illinois is a regional system, extending beyond geographic boundaries. Waste generated within a county is not necessarily disposed of in that county, therefore, the importation and exportation of waste is fairly common throughout Illinois. Any reduction or addition of capacity in a landfill may have regional impacts.

Future landfill regulations may also impact the remaining life of existing landfills. Most notably, the landfill regulations recently established by the Illinois Pollution Control Board caused several regional landfills to close prematurely. The IEPA reports that as a result of the regulations effective September 1992, eight landfills in Region 1 (Northwestern Illinois) and six landfills in Region 2 (Chicago Metropolitan area) were scheduled to close earlier than what their remaining capacity would otherwise indicate. Approximately 22,510,301 cubic yards of landfill capacity will be lost due to these premature closures.

There have been some efforts within the counties to limit or even prohibit the disposal of out-of-county waste. DeKalb County is one of the few counties that prohibits the operator of the landfill from accepting out-of-county waste (this was a condition of its siting approval). Therefore, no out-of-county waste, other than minimal quantities of refuse from bordering counties mixed in with DeKalb County waste, can be landfilled at the DeKalb County Landfill.

Special Collection/Disposal Requirements. On a regional or state level, many legislative initiatives may alter the way municipal waste is currently managed. Legislation has already been adopted in Illinois which requires non-traditional management of certain components of municipal waste. Examples include the ban of landscape waste from landfills; the requirement that components potentially containing PCB's be removed from white goods before landfill disposal; the development of a statewide collection network for household hazardous waste; the phased ban of whole tires from landfills; the mandatory collection of used lead-acid batteries from retailers; the ban of disposing motor oil at landfills; etc. These requirements and future requirements have the potential to transform current collection and disposal practices.

On a local level, the quantity of waste requiring management in the public waste system could vary if DeKalb County implements stricter regulations on the private management of waste. For example, if the County restricted incineration of landscape waste by the homeowner, it is likely that more landscape waste would be collected for composting.

Waste Reduction Initiatives. Waste reduction initiatives, including source reduction, reuse and recycling, are expected to increase in the upcoming years due to an increasing public awareness of environmental concerns and recent legislation promoting waste reduction. For instance, volume-based rate programs, in which residents pay a per-bag or per-sticker fee for each container of waste set out, encourage residents to minimize the amount of waste disposed since the cost is directly related to the volume set out. The result is that the amount of waste disposed in the landfills may be reduced. Source reduction, reuse and recycling will be discussed in more depth in the next stage of planning.

One particular piece of legislation which will impact waste reduction in DeKalb County is the University Recycling Act (P.A. 86-1363). Under this Act, which was signed into law in September 1990, Northern Illinois University and Kishwaukee Community College, among 60 other public universities and community colleges in Illinois, are required to develop a comprehensive solid waste reduction plan by January 1, 1995. The plans must provide for recycling marketable materials and be designed to achieve a minimum of 40 percent reduction of waste subject to landfill disposal by January 1, 2000 (with 1987 as a base year). The development and implementation of these plans will undoubtedly have a significant affect on the on the existing waste generation and recycling levels of DeKalb County.

Change in Waste Generation Per Capita. National studies have shown that changes in socioeconomic status, household size, demands for convenience and urbanization may impact per capita waste generation rates. The studies, however, have held conflicting views as to whether these factors cause an increase or decrease in waste generation per capita. Since these conflicts exist, waste generation rates per capita are held constant in this report.

Demographic Shifts. The purpose of this report is to assess the trends in generation of waste in DeKalb County, not demographic trends. The 1990 to 2015 projections of population and employment in this report are estimates, and they may vary from actual population and employment numbers in the future. The demographic data utilized in this report was obtained from reliable sources, however, and is the best available information. In order to continually update the levels of waste generation, any unforeseen shifts in demographic trends will ultimately need to be taken into account during the five year updates to the plan.

Educational Programming. The success of waste management programs is often related to the success of waste educational and awareness activities. In general, informational and educational activities have the greatest impact on waste reduction. Information is generally relayed to residents through local governments, haulers, recycling centers and community groups. It should be noted that a need may exist for more expanded local waste information, such as a directory of county-wide recycling/reuse opportunities.

Reporting Methodology. At the regional, state and even national level, there are conflicting ideas on the definition of municipal waste and recycling, as well as how generation and recycling rates should be measured. This report reflects the most current IEPA interpretations of municipal waste and recycling. However, standardized reporting measurements, conversion tables and tracking systems have not been developed or formally adopted by the State legislature. Although this report currently conforms with IEPA interpretations, the methodology preferred by the State in the future may change.

At the local level, no formal central reporting system is in place for DeKalb County to record the amounts of waste collected, landfilled, incinerated, recycled and composted. A few municipalities, including DeKalb, do track some refuse or recycling data, however, most municipalities do not formally track this information. Valuable waste data from landfill operators, haulers and private recycling companies may be difficult to obtain since it is often considered to be proprietary or since detailed records are simply not kept.

Reporting has been a growing issue among counties which are attempting to implement waste management plans. There are several benefits to the development of a simplified central reporting system which is sensitive to the proprietary nature of waste information. Data collected can be used to monitor the progress of waste management goals, to evaluate the effectiveness of programs and to plan future waste management programs. In addition, certain waste data is often needed to apply or receive grants and funding.

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CHAPTER NINE
CONCLUSIONS

This Needs Assessment study was performed to provide the foundation for an integrated waste management plan and to fulfil the requirements of the Solid Waste Planning and Recycling Act (415 ILCS 15/1 et. seq.) for DeKalb County. This report was funded in part with a grant from the Illinois Environmental Protection Agency (IEPA). The report provides a significant amount of detail about the demographics of DeKalb County, the county's municipal waste and total waste generation, the composition of the county's waste and the county's waste management system, including estimates of the amount of waste landfilled, incinerated, recycled, and composted in the county. Projections of future waste quantities based on demographic factors are developed for the period of 1993 through 2015. In addition, solid waste issues which may affect these projections are also discussed.

The primary sources of information for this report included county officials and documents; municipal officials and documents; waste hauling companies; local and regional landfill operators; recycling centers; landscape waste facilities; local commercial, institutional and industrial establishments; a general household waste weigh field study; Northern Illinois University staff; construction and demolition contractors; landscaping companies; on-site incineration facility operators; the Illinois Environmental Protection Agency; and various published sources. Based on the information obtained to develop this report, the following conclusions concerning waste management in DeKalb County have been drawn:

- General household waste generation for 1993 is estimated to be 43,626 tons or 3.1 pounds per capita per day (PCD). Commercial/Institutional waste generation for 1993 is estimated to be 25,236 tons or 1.8 PCD. Industrial office and lunchroom waste generation for 1993 is estimated to be 3,040 tons or 0.2 PCD. Industrial waste generation for 1993 is estimated to be 29,635 tons or 2.1 PCD. Construction/Demolition waste generation for 1993 is estimated to be 13,972 tons or 1.0 pound per capita per day.

- Municipal waste generation for 1993, which is composed of general household waste (51%), commercial/institutional waste (29%), industrial office and lunchroom waste (4%) and construction/demolition waste (16%), is estimated to be 85,874 tons or 6.1 PCD.

- Total waste generation for 1993, which is composed of general household waste (39%), commercial/institutional waste (22%), industrial waste (26%) and construction/ demolition waste (12%), is estimated to be 112,469 tons or 8.0 PCD.

- It is estimated that the composition by weight of DeKalb County's municipal waste includes paper (41%), other wastes, such as textiles, rubber, wood and others (14%), food (13%), landscape waste (12%), plastic (9%), metals (6%) and glass (5%). It is estimated that the composition by volume of DeKalb County's municipal waste includes paper (47%), plastic (22%), metals (10%), landscape waste (7%), food waste (6%), other wastes (6%), and glass (2%).

- Seven private haulers provide collection services in DeKalb County, including BFI - Rockford, Community Disposal, Illinois Valley Recycling, Marengo Disposal, Monarch Disposal, Tri-County Disposal (WMX) and Waste Management - West (WMX). Waste Management - West, which recently acquired DeKalb County Disposal (DCD), hauls the majority of the county.

- Nine municipalities contract for waste collection services. Collection services are privately arranged in four municipalities, as well as in the unincorporated areas of townships. Collection arrangements for commercial, institutional and industrial (CII) establishments are privately arranged as well.

- The average hauling distance required to dispose of general household waste throughout the county is estimated to be 14 miles.

- Landfilling is the primary means of disposal for waste generated within DeKalb County.

- An estimated 58,977 tons of municipal waste is expected to be landfilled in DeKalb County during 1993. It is estimated that the breakdown of municipal waste landfilled consists of general household waste (49%), commercial/institutional waste (23%), industrial office and lunchroom waste (5%) and construction/demolition waste (24%).

- An estimated 72,582 tons of total waste expected to be landfilled in DeKalb County during 1993. It is estimated that the breakdown of total waste landfilled consists of general household waste (40%), commercial/institutional waste (19%), industrial waste (23%) and construction/demolition waste (19%).

- The DeKalb County Landfill, located in Cortland, predominantly serves DeKalb County. The landfill, which is operated by Waste Management-West, will accept an estimated 79,208 tons of waste during 1993 based on 1992 levels. This estimate is a total of 77,379 tons of non-hazardous and 1,829 tons of special waste.

- Approximately 6,223 tons, or eight percent, of the non-hazardous waste disposed in the DeKalb County landfill was imported into the landfill during 1992 from communities located in counties bordering DeKalb County, including Kane, Kendall, LaSalle, Lee, McHenry and Ogle Counties. Importation of non-hazardous waste has been declining. Records indicate that only six percent was imported into the DeKalb County Landfill during 1993 from counties bordering DeKalb County.

- Landfill records indicate that quantities of waste landfilled (in both tonnage and cubic yardage) are highest in the spring and summer months and lowest in the fall and winter months.

- Landfills used to dispose of DeKalb County's non-hazardous waste include the DeKalb County Landfill (98%), Rochelle Municipal Landfill (1%), States Land Improvement (<1%), Winnebago Reclamation Landfill (<1%), Woodland Landfill (<1%), Peru Municipal Landfill (<1%), Davis Junction Landfill (<1%), and Morris Community Landfill (<1%).

- It is estimated that 1,426 tons, or 2 percent, of DeKalb County non-hazardous waste will be exported from DeKalb County to out-of-county landfills during 1993.

- The DeKalb County Landfill reports that disposal capacity will be depleted in 19.6 years, or by 2012. Landfill facilities located within proximity to DeKalb County have reported remaining capacity of 1 to 51 years based on current intake volumes.

- A total of 83 tons of municipal waste, or 121 tons of total waste, is expected to be incinerated in DeKalb County during 1993. Of this amount, an estimated 83 tons will occur from commercial/institutional establishments with on-site incinerators and 38 tons will occur from industrial establishments with in-site incinerators.

- DeKalb County is estimated to recycle 26,814 tons of municipal waste, or 39,766 tons of total waste in 1993. Of the general household materials recycled, an estimated 4,734 tons originates from curbside recycling collections, 1,960 tons originates from drop-off recycling centers, and 8,172 tons of landscape waste is composted. Of the CII establishment materials recycled, 7,863 originated from CII recycling efforts conducted by haulers, 466 originates from commercial/institutional establishments arranging their own markets, 228 originates from industrial establishments arranging their own markets (municipal waste recycling), 12,952 originates from industrial establishments (non-municipal waste recycling), 1,248 originates from the City of DeKalb's multi-family drop-

boxes and 1,739 tons originate from Northern Illinois University's (NIU's) internal recycling program.

- Households in eleven of the thirteen municipalities and various unincorporated areas within the County have curbside collection services. In other words, 65 percent of single family households in DeKalb County have curbside recycling programs available to them. Participation rates in these programs range from 75 to 95 percent.

- Drop-off recycling sites serving the DeKalb County area include the City of DeKalb's multi-family drop-boxes, DeKalb County Landfill Drop-Box, DeKalb Iron & Metal, NIU Student Association Recycling Center, R & T Recycling, and the WMX/DCD Processing Center.

- Many CII establishments in DeKalb County have incorporated recycling programs within their operations. In most cases, the establishments either arrange their own markets or contract recycling collection services.

- NIU and Kishwaukee College have implemented internal recycling programs. The University Recycling Act will require both universities to develop comprehensive waste management plans and to reduce their waste stream by 40 percent by January, 2000.

- DeKalb County is estimated to compost/land-apply 8,576 tons of municipal waste (and total waste) in 1993. An estimated 8,172 tons of landscape waste generated by residents will be composted in DeKalb County in 1993. An estimated 404 tons of landscape waste generated by commercial and institutional establishments will be composted in DeKalb County in 1993.

- The DeKalb County Landscape Waste Facility, located at the landfill in Cortland, provides DeKalb County, as well as many other communities in Northern Illinois, an outlet for composting landscape waste. The facility, operated by Waste Management, projects to accept over 61,000 cubic yards or 26,180 tons of landscape waste in 1993, although a majority of this material originates from locations outside of DeKalb County.

- Of DeKalb County's municipal waste discarded in 1993, it is estimated that 69 percent will be landfilled, less than 1 percent will be incinerated, and 31 percent will be recycled (21 percent recycled + 10 percent composted or land applied).

- Of DeKalb County's total waste discarded in 1993, it is estimated that 65 percent will be landfilled, less than 1 percent will be incinerated, 28 percent will be recycled and less than 7 percent will be composted.

- The municipal waste recycling rate (including quantities of municipal waste recycled and composted) of DeKalb County in 1993, estimated to be 31 percent, surpasses the State's municipal waste recycling goals. The Solid Waste Planning and Recycling Act requires the County to implement a waste management plan designed to achieve a recycling rate of 15 percent within three years and 25 percent within five years of implementation.

- Municipal waste generation is expected to increase within 0.09 and 0.26 percent per year between 1993 and 2015 based on demographic factors alone. Total waste generation is expected to increase within 0.08 and 1.6 percent per year between 1993 and 2015 based on demographic factors alone. These issues should be examined further in Phase II planning and in the 5-year planning updates.

- Factors which may impact the future generation and management of DeKalb County's waste include changes in the waste management system, regional disposal capacity, special collection/disposal requirements, waste reduction initiatives, increased waste generation per capita, demographic shifts, educational programming and reporting methodology.

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APPENDIX A

DEKALB COUNTY WASTE MANAGEMENT NEEDS ASSESSMENT

CONTACT/REFERENCE LIST

DEKALB COUNTY TELEPHONE CONTACT LIST

COUNTY
Ron Matekaitis, PH: 748-2093, FAX: 748-2055

MUNICIPALITIES
Village of Cortland, Ken Hetchler, 756-9041
City of Dekalb, Ronald Naylor, Director of Public Works, Cameron Davis, Asst. Director, PH: 748-2020 FAX: 765-2367
City of Genoa, Dale Schepers, 784-2271
Village of Hinckley, Dave Maroo, 286-3836
Village of Kingston, 784-5572
Village of Kirkland, Wayne Way, 522-6179
Village of Lee, Cass Larson, 824-2777
Village of Malta, Sandy Schafer, 825-2330
City of Sandwich, Barbara Olsen, 786-9321
Village of Shabonna, 824-2197
Village of Somonauk, Larry Warner, 498=2056
City of Sycamore, Gail Brantner, 895-4515
Village of Waterman, 264-3652

TOWNSHIPS
Afton Township, 756-7033
Clinton Township, Richard Hunt, 264-3502
Cortland Township, 895-9225
Dekalb Township, 758-8282, 758-5454
Franklin Township, Beverly Sarage, 522-6148
Genoa Township, Arden Aue, 784-3451
Kingston Township, Harold Malren, 784-5357
Malta Township, 825-2290
Mayfield Township, Donna Heide, 895-5408
Milan Township, 824-2570
Paw Paw Township, 246-9737
Pierce Township, Pat Braffet, 758-4234
Sandwich Township, 786-2069
Shabonna Township, 824-2108
Somonauk Township, Robert Grandgeorge, 498-2268
South Grove Township, 522-6698
Sycamore Township, 895-3766
Victor Township, 495-9302

PLANNING

DeKalb County Planning and Zoning Department, Chris Aiston, 895-7188
DeKalb County Economic Development Corporation, Roger Hopkins, PH: 895-2711, FAX: 895-7007
NIU Center for Government Studies, Ruth Ann Tobias, 753-0922
DeKalb Chamber of Commerce, Kelly Soesbe, 756-6306

HAULERS

Browning Ferris Industries/Rockford (BFI)
Community Disposal, Robert Voss, PH: 786-7151
Illinois Valley Recycling, John Roelfsema, PH: 433-9400
Marengo Disposal, Hank DeBoer, PH: 568-7274, FAX: 568-5424
Monarch Disposal, Doug Williams, PH: 377-5780, FAX: 741-9818
Tri-County Disposal (WMI), Frank McCoy, Pat McDowell, PH: 942-5055, FAX: 942-5239
Waste Management Inc (WMX)/DeKalb County Disposal (DCD), Al Bilthouse, Fred Cuscera PH: 708/879-9190 Bob Goon, PH: 758-6906, Derek DeGroot, PH: 758-6606, FAX: 758-3600

RECYCLING CENTERS

City of DeKalb, Cameron Davis, PH: 748-2000
DeKalb County Recycling (DCD), Derek DeGroot, 758-5209
DeKalb County Landfill, Dale Hoekstra, 758-6906
DeKalb County Iron and Metal Co. (DIMCO), Jeff 758-2458
NIU Student Association Recycling Center, 753-9920

REUSE CENTERS

Country Store (resale hop), 756-2378
DeKalb Area Food Pantry, 758-5432
Open Closet, 758-1388 or 827-3737
Twice is Nice, 895-6077
Salvation Army, 756-4308
Self Help and Resource Exchange, 758-3820 (DeKalb), 748-6210 (Genoa), 824-2619 (Shabonna)

IN-COUNTY LANDFILL

DeKalb County Landfill, WMI, Dale Hoekstra, 758-6906, 708/232-7664

OUT-OF-COUNTY LANDFILL

Davis Junction Landfill (Ogle County), 874-9000
Morris Community Landfill (Grundy County), 469-3941
Peru Municipal Landfill (Lasalle County), 223-2962

Rochelle Municipal Landfill (Ogle County), 562-2494
States Land Improvement Landfill (Lasalle County), 434-1808
Winnebago Reclamation Landfill (Winnebago County), 654-4779
Woodland Landfill (Kane County), 708/741-0219

LANDSCAPE WASTE COMPOST SITE
DeKalb County Landfill, WMI, Dale Hoekstra, 758-6906, 708/232-7664

NORTHERN ILLINOIS UNIVERSITY
Pat Hewitt, Business and Operations, 753-9545
Ed Heiston, 753-9793
Tom Anderson, Grounds,

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
Robert McGrew, 217/782-9289

COMMERCIAL, INSITUTIONAL AND INDUSTRIAL ESTABLISHMENTS

3M
A-1 Watson's Landscaping
Action Support Service
AG Communication Systems
All Felt Products
Alloyd Co. Inc
American National Bank
Argos Products Company, Inc
Art's Food Market
Aspen Plastic Inc.
ATC/Vancom of Il. Inc.
Auto Meter
A.O. Smith Harvestore
Barb City Manor
Barber-Greene
Brad Manning Ford
Brown's Super Value
Buhr's Landscaping & Lawn Care
Burch Jewelers Inc.
Calrey Industries Inc.
Carder Hanlin Travel
Circle Systems, Inc
City of DeKalb
Coleman Landscaping
Commonwealth Edison
Continental Envelope
Creative Calligraphy
Crum Halsted Agency, Inc
CTS Knights
Cushioneer Inc.
Cy Tec, Inc
C.D.A.
C.L.R. Resources, Inc.
Dave's Lawn & Landscape Maintenance
DeKalb Area Retirement Center
DeKalb County Courthouse
DeKalb County Farm Bureau
DeKalb County Landfill
DeKalb County Nursing Home
DeKalb Dental Clinic
DeKalb Feeds, Inc.
DeKalb Genetics
DeKalb High School
DeKalb Imp
DeKalb Iron & Metal
DeKalb Magnetic Reson. Ctr

DeKalb Mechanical
DeKalb Precision
DeKalb School Dist. #428
Del Monte Foods
Doty & Sons Concrete Products, Inc.
Driv-Lok, Inc.
DuPlex Products
DuPlex Products
Eagle
Eco-Finish Inc.
Elgin Exercise Equipment Corp
Elliot & Wood Inc.
Elmer Larson Inc.
Emanual Lutheran Church
Family Podiatry
First of America Bank
General Electric
Glidden Campus Florist
Gourmet Press
Graphics & Industrial Circuits
Greenlee Tool
G.T.E.
Hair Professionals
Hiatt Bros-E.B. Inc
Howard Eychaner, Rentals
IDEAL IND. Inc.
Impact Industries
Imperial Marble
J & M Fab Metals Inc.
J.C. Penney
Jensen & Son, Inc
Jewel
Johnson Controls, Inc.
Johnson Seat & Canvas
Kirkland IGA
Kishwaukee College
Kishwaukee Community Hospital
Kishwaukee YMCA
John S. Koach, CPA
Bob Kyler Excavating
Lowell's Discount Tire
Mandarin Chinese Restaurant
Medical Arts Center
Metlife
Michael's Super Market
Micro Solutions
Nehring Electrical
Northern Illinois University
Oil X-Change
Opportunity House Industries
Plaid Rabbit
PrimeTime Telemarketing
PrinTech Graphix
QRS Incorportaed
Sandwich Community Hospital
Sandwich Community School District
Seymore of Sycamore
Share Oil Co.
Smalls Furniture
Spaulding Composites Co.
Stadium View Apts II
Stahl Construction
Suter Co. Inc.
Total Lawn Care
Tower Equipment & Supply
Turner/Cooper Hand Tools
UARCO, Inc
Valley Recreational Products, Inc.
Vencor Hospital
Viking Office Supply West
Village Commons Bookstore
Walmart
Warner Cable
Waterman Community Unit District 431
Wisted's Supermarket
Wright's Jewelry

APPENDIX B

SURVEYS

DEKALB COUNTY BACKGROUND TELEPHONE SURVEY

COUNTY CONTACT: TITLE:

PHONE NUMBER:

MAJOR HIGHWAYS:

- Interstate Highways
- U.S. Highways

RAILROADS:

COUNTY SEAT LOCATION:

LAND USE:	Breakdown	Location
Agricultural	%	
Residential	%	
Commercial/Institutional	%	
Industrial	%	

LEVEL OF HOUSING STARTS:

HISTORY:

- Population Trends
  - growth patterns
  - demographic shifts
- Employment Trends
  - orientation of businesses/industries
  - growth patterns
  - economic plans

LOCAL/REGIONAL SOLID WASTE MANAGEMENT HISTORY:

SOLID WASTE ISSUES/CONCERNS:

DEKALB COUNTY LOCAL GOVERNMENT SOLID WASTE SURVEY
APRIL 1993

Please complete this survey.

Community Name:_____

Contact Person:_____ Title:_____

Phone Number:_____ FAX Number:_____

REFUSE COLLECTION

1. Check (✓) the residential collection arrangement which applies to your community.

_____ Private Contract Collection - Individual residents contract directly with haulers for refuse collection services.

_____ Municipal Contract Collection - One or more haulers operate under contract to the municipality, which collects fees or taxes from residents and then pays the refuse haulers for collection services.

_____ Franchise - The municipality grants franchises to one or more haulers for refuse collection services, usually within defined service areas. Fees are collected directly from the customers by refuse haulers.

_____ Municipally Owned - The municipality has its own trucks and provides residential refuse collection services.

2. Please provide information on the hauler(s) which provide services in your community and check (✓) which type of services each hauler provides in your community.

Hauler(s) Name, Contact Person, Phone Number	Residential Refuse Services	Residential Recycling Services	Residential Yard Waste Services	Commercial Services
_____	_____	_____	_____	_____
_____				
_____				
_____	_____	_____	_____	_____
_____				
_____				

3. Are haulers required to obtain a license to provide services in your community?
_____ YES _____ NO If yes, please explain._____

4. Please estimate the percentage of residents which dispose of their **refuse** using the following methods:

_____% set at the curb for hauler collection
_____% bring to work or elsewhere for hauler collection
_____% burn in burn barrels or in back yard
_____% other (list)

If your community contracts or provides collection services, please answer questions 5-9.

5. Please supply the following data on residential refuse and or recycling collection.

Scheduled Collection Day(s) _____ Time of Collection _____

Collection Frequency Per Week _____

6. Please complete the chart below to indicate the number of households receiving collection services from each hauler in your community (single family: 1-4 units, multi-family: 5+ units).

Hauler(s)	Homes Served: Refuse Collection		Homes Served: Recycling Collection		Homes Served: Yard Waste Collection	
	SF	MF	SF	MF	SF	MF

7. Check (✓) whether the monthly bill for residential collection/disposal is paid by:

Direct User Fee (Monthly Hauler Bill) _____
Direct User Rate (Bag or Sticker Rate) _____
Property Taxes _____
Other (i.e, a combination of these methods) _____

8. Please indicate the history of your community's collection costs by completing the chart below. If the costs are directly paid by residents, list the costs within the resident column. If the costs are paid by the community through a tax fund, list the cost within the community column. If your community only has one fee, please list which collection services are included for that fee.

Year	Refuse Collection Monthly Cost ($)		Recycling Collection Monthly Cost ($)		Yard Waste Collection Monthly Cost ($)	
	resident	community	resident	community	resident	community
1993						
1992						
1991						
1990						

9. As information is available, please complete the chart below to indicate the annual quantity (in tons) of refuse collected/disposed from each sector in your community. Please specify if a measure other than tons is used.

Year	Quantity of Refuse Collected/Disposed	
	Residential	Commercial/Institutional/Industrial
1992		
1991		
1990		

Please describe how the quantity information indicated above was developed (through landfill records, hauler records, estimation, etc.).

_____

CURBSIDE RECYCLING

If your community has a curbside recycling program, please answer 10-13.

10. Please circle the materials collected: newspaper corrugated chipboard high grade paper mixed paper magazines glass aluminum steel/bi-metal HDPE plastic PET plastic other:_____

11. Do residents have recycling containers? _____YES _____NO If so, please indicate the following:

the type of containers used _____ bin or _____ bag

the shape and capacity of the containers_____

who provides of the containers_____

12. Please check (✓) how are the collected materials are sorted?

_____ hauler sorts the materials into truck compartments at the curb

_____ hauler brings unsorted or semi-sorted materials to a facility to be sorted

13. Please indicate how many eligible households set out recyclables at least once per month.

_____

14. As information is available, please complete the chart below to indicate the annual quantity (in tons) of materials recycled from each sector in your community. Please specify if a measure other than tons is used.

Year	Quantity of Materials Recycled	
	Residential	Commercial/Institutional/Industrial
1992		
1991		
1990		

Please describe how the quantity information indicated above was developed (through municipal records, hauler records, estimation, etc.).

_____

YARD WASTE COLLECTION

15. Please estimate the percentage of residents which dispose of their yard waste using the following methods:

_____% backyard management by resident (i.e., composting, mulching, leave on lawn, etc.)
_____% set at residents curb for hauler collection
_____% set at residents curb for Public Works collection
_____% burned by resident
_____% other (list)

16. Please list any yard waste services offered by your Public Works Department.

_____

17. How (or where) does Public Works process/dispose of yard waste?

_____

18. As information is available, please complete the chart below to indicate the annual quantity (in tons) of yard waste composted or land-applied from each sector in your community. Please specify whether a measure other than tons is used.

Year	Quantity of Landscape Waste Composted or Land-Applied	
	Residential	Commercial/Institutional/Industrial
1992		
1991		
1990		

Please describe how the quantity information indicated above was developed (through Public Works records, hauler records, estimation, etc.).

_____

RECYCLING CENTERS

19. Please list all known recycling centers utilized by members of your community.

Facility Name	Location	Phone Number
_____	_____	_____
_____	_____	_____
_____	_____	_____

If your unit of government operates a recycling center, please answer questions 19-24.

20. Please provide the following information on your government-operated recycling center:

Facility Name_____ Contact_____

Location_____ Phone_____

Days Open_____ Hours of Operation_____

21. Please circle the materials accepted at the drop-off center: newspaper corrugated chipboard magazines catalogs high grade paper glass aluminum steel/bi-metal HDPE plastic PET plastic other:_____

22. Please describe the operations of your drop-off center:

staffing: _____none _____part-time _____full-time
processing: _____none _____minor _____major
transportation agent: _____hauler _____operator independently arranged other:
marketing agent: _____hauler _____operator independently arranged _____co-marketed

23. Are the materials centrally processed?_____ If so, where?_____

24. Please list the communities which significantly utilize this recycling center.

_____

MULTI-FAMILY RECYCLING

25. Please estimate the level of multi-family recycling occurring within your community.

_____

COMMERCIAL RECYCLING

26. Please estimate the level of commercial recycling occurring within your community.

_____

27. Please list any organizations providing commercial recycling services in your community.

_____

GOVERNMENT RECYCLING

28. Please describe any in-house recycling programs occurring at your government office.

_____

29. Please describe any procurement practices at your office which favor recycled products.

_____

SEWAGE TREATMENT

30. Please identify your community's sewage treatment plant._____

31. How does this facility dispose of sludge/grit?_____

HOUSEHOLD HAZARDOUS WASTE

32. How is the disposal of household hazardous waste handled in your community? (present or planned)

_____

LARGE APPLIANCES OR "WHITE GOODS"

33. How is the disposal of large appliances or "white goods" handled in your community? (present or planned)

_____

REPORTING

34. Does your community require (through licensing or ordinance) that haulers report quantities of refuse collected and disposed? _____YES _____NO (If yes, please explain)

_____

35. Does your community require (through licensing or ordinance) that haulers, recycling centers or any other recycling service provider report quantities of materials collected and recycled? _____YES _____NO (If yes, please explain)

_____

36. Does your community require (through licensing or ordinance) that haulers report quantities of yard waste collected and composted/land-applied? _____YES _____NO (If yes, please explain)

_____

SOLID WASTE EDUCATION/INFORMATION ACTIVITIES

37. Please describe any solid waste educational/informational programming occurring in your community (i.e. printed materials, school programs, awareness activities, etc.).

_____

_____

38. Who is responsible for educational/informational activities?_____

39. Is there a need for any specific type of solid waste educational/informational material?

_____

SOLID WASTE CODES AND ORDINANCES

40. Please check (✓) the following solid waste oriented ordinances which are in effect in your community.

_____ Hauler Licensing
_____ Single-Family Recycling Ordinance
_____ Multi-Family Recycling Ordinance
_____ Commercial Recycling Ordinance
_____ Ordinance Prohibiting the Burning of Refuse
_____ Ordinance Prohibiting the Burning of Yard Waste
_____ Anti-Scavenging Ordinance for Recyclables
_____ Backyard Composting Specifications and Standards
_____ Other (list)

SOLID WASTE CONTACTS

41. Please list any significant solid waste/recycling oriented individuals, committees or organizations within your community.

Contact Name	Organization	Phone Number
_____	_____	_____
_____	_____	_____

SOLID WASTE ISSUES/COMMENTS

42. Please comment on any future plans your community may concerning recycling or solid waste management in DeKalb County.

_____

43. Please indicate any solid waste issues which you feel are of significance to DeKalb County.

_____

Thanks for your time and effort. Questions and comments may be directed to Amanda Rutter of Patrick Engineering at (708) 790-8508. Please return the survey by May 15, 1993 to:
Mr. Ron Matekaitis, City Attorney, City of DeKalb, 200 S. 4th Street, DeKalb, IL, 60115.

DEKALB COUNTY HAULER
TELEPHONE SURVEY

HAULER:

CONTACT NAME: TITLE:

ADDRESS: PHONE NUMBER:

REFUSE COLLECTION

1. Do you provide refuse collection services to DeKalb County residents?

2. Identify communities provided with residential service and number of households with service:

Community	# of Households

3. Do you provide refuse collection services to DeKalb County businesses?

4. Identify communities provided with CII service and number of accounts with service:

Community	# of Accounts

5. Indicate the annual quantity (in tons) of refuse collected/disposed in DeKalb County from each sector.

Year	Quantity of Refuse Collected/Disposed			
	TOTAL	% RES	% CII	% CD
1992				
1991				
1990				

6. Identify any conversions used to convert cubic yards to pounds:

7. Identify transfer station(s) used to dispose of DeKalb County refuse.

8. Identify landfill(s) used to dispose of DeKalb County refuse and the percent taken to each site.

	Site Name	% of Total Taken to Site
In-County		
Out-of-county		

9. How is the HHW handled?

10. How are white goods handled?

IMPORTATION OF REFUSE

11. Identify the origin and quantity of refuse disposed in DeKalb County imported from areas outside of DeKalb County:

RESIDENTIAL CURBSIDE RECYCLING SERVICES

12. Do you provide curbside recycling services to residents?

13. Identify communities with curbside recycling service and number of households with service:

14. Identify the materials collected: newspaper corrugated chipboard high grade paper mixed paper magazines glass aluminum steel/bi-metal HDPE plastic PET plastic other:

15. Do residents have recycling containers?

Identify the type of containers used:

Identify the shape and capacity of the containers:

Identify who provides of the containers:

16. How are the collected materials are sorted?

17. Indicate how many eligible households set out recyclables at least once per month:

18. Indicate the annual quantity (in tons) of materials recycled from each sector.

Year	Quantity of Materials Recycled		
	TOTAL	% RES	% CII
1992 1991 1990			

19. Identify where recyclable materials are processed and marketed:

LANDSCAPE WASTE COLLECTION SERVICES

20. Do you provide landscape waste collection services to DeKalb County residents?

21. Identify communities provided with residential landscape waste service and number of households with service:

Community	# of Households

22. Do you provide landscape waste collection services to DeKalb County residents?

23. Identify communities provided with CII landscape waste collection service and number of accounts with service:

Community	# of Accounts

24. Indicate the annual quantity (in tons) of landscape waste composted/land-applied from each sector.

Year	Landscape Waste Composted/Land-Applied		
	TOTAL	% RES	% CII
1992			
1991			
1990			

25. Identify the sites where the landscape waste was processed/composted/land-applied:

MULTI-FAMILY/MOBILE HOME COLLECTION SERVICES

26. Do you provide multi-family or mobile home recycling services:

27. Identify the number of multi-family complexes with service:

28. Identify the number of mobile homes with service:

29. Identify which materials are collected from multi-family units/mobile homes for recycling:

COMMERCIAL/INSTITUTIONAL/INDUSTRIAL COLLECTION SERVICES

30. Do you provide commercial recycling services:

31. Identify how many businesses are provided with recycling service:

32. Identify which materials are collected from businesses for recycling:

OTHER

33. Do you have any plans to provide/extend any recycling services?

34 Do you provide any solid waste educational services?

35. Do you have any comments or concerns to be addressed regarding the management of solid waste in DeKalb County?

LANDFILL(S) SERVING DEKALB COUNTY
TELEPHONE SURVEY

LANDFILL NAME: OWNER/OPERATOR:

CONTACT PERSON: TITLE:

ADDRESS: PHONE NUMBER:

1. CLASSIFICATIONS OF WASTE ACCEPTED AT THE LANDFILL (I.E. REFUSE, SLUDGE, SAND, ASH, SPECIAL, HAZARDOUS:

2. UNIT OF MEASURE USED (TONS, CUBIC YARD, COMPACT CUBIC YARD):

3. CONVERSION FACTORS USED:

4. TIPPING FEES:

5. QUANTITY (IN TONS) OF WASTE RECEIVED DURING 1992:
   - % RESIDENTIAL
   - % COMMERCIAL/INSTITUTIONAL/INDUSTRIAL
   - % CONSTRUCTION/DEMOLITION
   - % SPECIAL

6. ORIGIN OF WASTE:
   - % DEKALB COUNTY
   - % OUT-OF-COUNTY WASTE (SPECIFY IMPORTERS)

7. HOW DOES THE INCOMING WASTE OF 1992 RELATE TO PAST YEARS:

8. HOW MUCH WASTE IS DELIVERED BY:

   % HAULERS

   % COMMERCIAL ACCOUNTS

   % INDUSTRIAL ACCOUNTS

   % GOVERNMENTAL

   % CASH ACCOUNTS

9. DAILY CAPACITY RANGE OF FACILITY:

10. REMAINING CAPACITY AT FACILITY:

11. EXPECTED CLOSURE DATE OF FACILITY:

12. OFFICIAL PLANS FOR EXPANSION:

13. OUT-OF-COUNTY RESTRICTIONS (PAST OR PRESENT):

14. INFORMATION COLLECTED AT GATE/WEIGHT RECEIPTS:

15. PUBLIC INFORMATION/EDUCATION ACTIVITIES PERFORMED:

DEKALB COUNTY RECYCLING CENTER
TELEPHONE SURVEY

FACILITY:

CONTACT NAME: TITLE:

ADDRESS: PHONE NUMBER:

1. DAYS OPEN & HOURS OF SERVICE:
   Attended:
   Unattended:

2. START DATE OF SERVICE:

3. MATERIALS COLLECTED:
   newspaper corrugated chipboard high grade paper low grade paper
   glass aluminum steel/bi-metal aerosol #1 plastics #2 plastics
   other:

4. OPERATOR:
   Public Works
   For-Profit
   Volunteer/Not-For-Profit
   Hauler

5. TYPE OF FACILITY:
   Drop-Off (no buy-back)
   Drop-Off (limited buy-back)
   Drop-Off (buy-back only)
   Central Processing Center
   Commercial Collection Service

6. TOTAL QUANTITY OF MATERIALS COLLECTED ANNUALLY:
   (Send records for past three years)

   Dekalb County% Out-of-County%

   RES% CII%

7. STAFFING:
   - none
   - volunteer
   - paid part-time
   - paid full-time

8. PROCESSING/TYPE OF EQUIPMENT UTILIZED:
   - none
   - minor
   - major

9. TRANSPORTATION/MARKETING:
   - hauler
   - operator independently arranges
   - co-marketing relationships

10. PROCESSOR AND/OR END MARKET(S):

11. COMMUNITIES WHICH UTILIZE SERVICES:
   Residential CII

12. SCOPE OF PROCESSING/MARKETING SERVICES:

13. SCOPE OF COMMERCIAL SERVICES:

14. FUNDING SOURCES:

15. EDUCATIONAL ACTIVITIES:

16. REPORTING METHODOLOGY/SYSTEM:

17. FUTURE PLANS:

18. COMMENTS & CONCERNS:

DEKALB COUNTY CONSTRUCTION/DEMOLITION WASTE TELEPHONE SURVEY

BUSINESS:

CONTACT NAME: TITLE:

ADDRESS: PHONE NUMBER:

1. NATURE OF BUSINESS:

2. QUANTITY OF CONSTRUCTION/DEMOLITION/EXCAVATION DEBRIS GENERATED/DISPOSED PER YEAR:

3. METHODS OF DISPOSAL (Percent disposed per method)

Landfill	%
Burn on-site	%
Bury on-site	%
Other	%

4. DISPOSAL SITES UTILIZED:

COMPOSTING FACILITIES SERVING DEKALB COUNTY
TELEPHONE SURVEY

FACILITY:

CONTACT: TITLE:

ADDRESS: PHONE NUMBER:

1. OPERATOR:
   - Local Government/Public Works
   - For-Profit

2. DAYS OPEN & HOURS OF SERVICE:

3. COLLECTION SEASON:

4. START DATE OF OPERATIONS:

5. SIZE OF FACILITY & DAILY CAPACITY:

6. MATERIALS COLLECTED AND PRICING STRUCTURE:

7. TOTAL QUANTITY OF LANDSCAPE WASTE COLLECTED ANNUALLY:

   DeKalb County% Other%

   Residential% CII%

8. LOCAL COMMUNITIES/HAULERS/BUSINESSES WHICH UTILIZE THE FACILITY:

9. USES FOR END PRODUCT

10. REPORTING METHODOLOGY/SYSTEM:

11. FUTURE PLANS:

12. COMMENTS & CONCERNS:

DEKALB COUNTY LANDSCAPER TELEPHONE SURVEY

BUSINESS:

CONTACT NAME: TITLE:

ADDRESS: PHONE NUMBER:

1. NATURE OF BUSINESS:

2. QUANTITY OF LANDSCAPE WASTE MANAGED/COLLECTED PER YEAR:

3. ORIGIN OF WASTE:
   - Residential
   - Commercial/Institutional/Industrial

4. METHODS OF DISPOSAL (Percent disposed per method)

Compost Site	%
Land Apply	%
Burn	%
Publicly Distribute	%
Other	%

5. DISPOSAL SITE(S) UTILIZED:

DEKALB COUNTY COMMERCIAL SURVEY
APRIL 1993

Please complete this survey and the attached worksheet.

Company Name _____ Phone _____

Contact Person _____ Title _____

Municipality _____ Zip Code _____

INFORMATION ABOUT YOUR BUSINESS

1. Please describe the product made or the service provided by your company at this facility.

_____

2. Please identify the SIC code of your business.

_____

3. How many full-time employees work at this facility?

_____

4. How many part-time employees work at this facility?

_____

REFUSE COLLECTION

5. Please identify the name of your refuse hauler.

_____

6. Please indicate the amount of non-special refuse discarded per year in either cubic yards or pounds. (Non-special refuse does not require an IEPA manifest). Use the worksheet attached to this survey if you do not have records of the actual quantity. (Please include the worksheet with this survey).

_____Cubic Yards of Refuse in Dumpster Per Year OR

_____Cubic Yards of Refuse in Compactor Per Year OR

_____Pounds of Refuse in Cans of Bags Per Year

7. Check (✓) whichever statement applies:

____ The amount of refuse discarded indicated in Question 6 is a rough estimate, based on the worksheet attached to this survey or a similar estimation method.

____ The amount of refuse discarded indicated in Question 6 is an actual quantity, based on regular weighing or records such as bills from the hauler.

8. Please estimate what percentage (by weight) of your discarded refuse consists of the following materials:

Material	Percent by Weight of Refuse
Paper	%
Metals	%
Glass	%
Plastics	%
Pallets & Wood Scrap	%
Food & Kitchen Waste	%
Construction/Demolition Debris	%
Other:	%

9. Please provide the following information about your collection/disposal service: (businesses that receive refuse service as part of their rent should skip to 9.c.)

a. Indicate the number and type of containers utilized to collect refuse. Also indicate the frequency of pick-up.

Container size (cubic yards)	Number of Containers	Frequency of Pick-up (i.e. twice per week)	Check (✓) if Compactor
1 cy			
2 cy			
3 cy			
6 cy			
10 cy			
20 cy			
30 cy			
40 cy			

If container are picked up on demand (i.e. the hauler is called when the container is full) indicate the average number of pick-ups per month.

b. Indicate the cost of your collection service.

$_____ per week per month per pick-up *(circle one)*

c. If you share a refuse container with another business and refuse service is included with your rent, please check (✓) here. _____

10. Does your facility generate any special, non-hazardous waste? _____ Yes _____ No

11. Please check (✓) one of the following statements:

_____ Our business has conducted a waste audit in this facility.

_____ Our business is interested in conducting a waste audit in this facility.

_____ Our business is not interested in conducting a waste audit in this facility.

RECYCLING PROGRAM *(Recycling is defined as materials discarded from the facility which have been recovered by a recycling service or market. Recycling does not include in-house scrap reuse or the recycling of a material such as "virgin stock" back into the production process.)*

12. Please check (✓) one of the following statements:

_____ Our business has an operating recycling program at this facility.

_____ Our business is interested in having a recycling program at this facility.

_____ Our business is not interested in having a recycling program at this facility.

If your facility does not have a recycling program, please answer question 13.

13. Please check (✓) the obstacles or difficulties of establishing a recycling program experienced by your facility:

_____ lack of available information/technical assistance to plan or implement a program

_____ the benefits of a program are unknown

_____ lack of upper level management interest or support

_____ lack of employee interest or support

_____ recycling service providers and/or markets are not available to collect materials from the facility

_____ lack of needed equipment and/or containers

_____ lack of storage space

_____ program is not considered to be economically viable

_____ other (please list)

If your facility does have a recycling program, please answer questions 14-15.

14. In the following table, please indicate which materials from your facility are recycled by estimating the annual volume (cubic yards) or weight (pounds) of material recycled, the service or markets that collects the recycled materials and the annual revenue or expense realized from your recycling program.

Material	Quantity Recycled (per year)	Recycling Service or Market Destination	Revenue or Cost (per year)
Office Paper	cy or lbs		$
Corrugated Cardboard	cy or lbs		$
Metals, non-ferrous	cy or lbs		$
Metals, ferrous	cy or lbs		$
Glass	cy or lbs		$
Plastics	cy or lbs		$
Other:	cy or lbs		$

15. Please check (✓) whichever applies:

____ The amount recycled listed in Question 14 is <u>in addition</u> to the amount of refuse listed in Question 6.

____ The amount recycled listed in Question 14 is included in the amount of refuse listed in Question 6.

16. Please check (✓) any of the following services offered by or products developed by your facility to DeKalb residents or businesses:

_____ accepts materials on-site or provides recycling collection services to residents (e.g. newspaper, aluminum, tin, plastics, glass, etc.)

_____ accepts materials on-site or provides recycling collection services to businesses (e.g. office paper, corrugated paper, metals, plastics, glass, asphalt, construction/demolition debris, film, lead-acid batteries, motor oil, rubber/tires, textiles/rags, cooking grease, solvents, etc.)

_____ accepts materials on-site or provides reusable item collection services to residents (e.g. books, clothing, food, furniture, equipment, paint, milk delivery, diaper services, etc.)

_____ accepts materials on-site or provides reusable item collection services to businesses (e.g. barrels and drums, cartridges/ribbons, pallets/skids, books, clothing, food, furniture, equipment, etc.)

_____ manufactures or distributes products made from post-consumer recycled materials or reused materials

_____ other (solid waste management oriented service or product)

If you have checked any of the statements above, please describe your service or product and enclose any additional information. Information collected from Question 16 may be assembled into a recycling/reuse directory for DeKalb County.

_____

_____

_____

_____

Thanks for your time and effort. Questions and comments may be directed to Amanda Rutter of Patrick Engineering at (708) 790-8508. Please return the survey by May 15 to:
Ron Matekaitis, City Attorney, City of DeKalb, 200 S. 4th Street, DeKalb, IL, 60115.

WORKSHEET TO DETERMINE YOUR COMPANY'S REFUSE DISPOSAL

This simple worksheet will help you calculate your company's annual refuse disposal in case you do not have records available. Please include this worksheet with your survey.

First, what container does the refuse hauler collect your refuse from?

A. Dumpster or compactor (do Part A only).
B. Cans or bags (do Part B only).

PART A

What is the capacity of your dumpster or compactor? (If you don't know, see Note below). _____ cubic yards

How many dumpsters or compactors of this size do you have?

How many times per week is each container emptied? x_____ containers

What percentage of the container is full at the time of pickup? x_____ collections per week

x_____ % full
÷ 100

Compute the numbers to find the total. x 52 weeks per year

=_____ Total cubic yards

Repeat the above calculations for additional dumpsters or compactors of different size. Please write the total(s) in the appropriate blank(s) to the right.

_____ Total cubic yards in dumpsters per year

_____ Total cubic yards in compactors per year

PART B

NOTE: Please calculate according to Part A if you are able to.

What size can or bag do you use? (Typical refuse bags are 30 or 33 gallons). _____ gallons

How many cans or bags of refuse do you throw away in a week? x_____ bags per week

What percentage of the can or bag is full at the time of pickup? (If you use bags, please enter 50). x_____ % full
÷ 100

x 52 weeks per year

÷ 212 gallons per cubic yard

Compute the numbers to find the quantity of refuse discarded. = _____ Total cubic yards

DEKALB COUNTY INDUSTRIAL SURVEY
APRIL 1993

Please complete this survey and the attached worksheet.

Company Name _____ Phone _____

Contact Person _____ Title _____

Municipality _____ Zip Code _____

INFORMATION ABOUT YOUR BUSINESS

1. Please describe the product made or the service provided by your company at this facility.

_____

2. Please identify the SIC code of your business.

_____

3. How many full-time employees work at this facility?

_____

4. How many part-time employees work at this facility?

_____

5. What percentage of all employees work on the production line or in a production-related capacity?

_____

REFUSE COLLECTION

6. Please identify the name of your refuse hauler.

_____

7. Please indicate the amount of non-special refuse discarded per year in either cubic yards or pounds. (Non-special refuse does not require an IEPA manifest). Use the worksheet attached to this survey if you do not have records of the actual quantity. (Please include worksheet with this survey).

_____Cubic Yards of Refuse in Dumpster Per Year OR

_____Cubic Yards of Refuse in Compactor Per Year OR

_____Pounds of Refuse in Cans of Bags Per Year

8. Check (✓) whichever statement applies:

____ The amount of refuse discarded indicated in Question 7 is a rough estimate, based on the worksheet attached to this survey or a similar estimation method.

____ The amount of refuse discarded indicated in Question 7 is an actual quantity, based on regular weighing or records such as bills from the hauler.

9. Please estimate what percentage (by weight) of your discarded refuse consists of the following materials:

Material	Percent by Weight of Refuse
Paper	%
Metals	%
Glass	%
Plastics	%
Pallets & Wood Scrap	%
Food & Kitchen Waste	%
Construction/Demolition Debris	%
Other:	%

10. Please provide the following information about your collection/disposal service: (businesses that receive refuse service as part of their rent should skip to 10.c.)

a. Indicate the number and type of containers utilized to collect refuse. Also indicate the frequency of pick-up.

Container size (cubic yards)	Number of Containers	Frequency of Pick-up (i.e. twice per week)	Check (✓) if Compactor
1 cy			
2 cy			
3 cy			
6 cy			
10 cy			
20 cy			
30 cy			
40 cy			

If containers are picked up on demand (i.e. the hauler is called when the container is full) indicate the average number of pick-ups per month.

b. Indicate the cost of your collection service.

$_____ per week per month per pick-up *(circle one)*

c. If you share a refuse container with another business and refuse service is included with your rent, please check (✓) here. _____

11. Does your facility generate any special, non-hazardous waste? _____ Yes _____ No

12. Please check (✓) one of the following statements:

_____ Our business has conducted a waste audit in this facility.

_____ Our business is interested in conducting a waste audit in this facility.

_____ Our business is not interested in conducting a waste audit in this facility.

RECYCLING PROGRAM (Recycling is defined as materials discarded from the facility which have been recovered by a recycling service or market. Recycling does not include in-house scrap reuse or the recycling of a material such as "virgin stock" back into the production process)

13. Please check (✓) one of the following statements:

_____ Our business has an operating recycling program at this facility.

_____ Our business is interested in having a recycling program at this facility.

_____ Our business is not interested in having a recycling program at this facility.

If your facility does not have a recycling program, please answer questions 14.

14. Please check (✓) the obstacles or difficulties of establishing a recycling program experienced by your facility:

_____ lack of available information/technical assistance to plan or implement a program

_____ the benefits of a program are unknown

_____ lack of upper level management interest or support

_____ lack of employee interest or support

_____ recycling service providers and/or markets are not available to collect materials from our facility

_____ lack of needed equipment and/or containers

_____ lack of storage space

_____ program is not considered to be economically viable

_____ other (please list)

If your facility does have a recycling program, please answer questions 15-16.

15. In the following table, please indicate which materials from your facility are recycled by estimating the annual volume (cubic yards) or weight (pounds) of material recycled, the service or markets that collects the recycled materials and the annual revenue or expense realized from your recycling program.

Material	Quantity Recycled (per year)	Recycling Service or Market Destination	Revenue or Cost (per year)
Office Paper	cy or lbs		$
Corrugated Cardboard	cy or lbs		$
Metals, non-ferrous	cy or lbs		$
Metals, ferrous	cy or lbs		$
Glass	cy or lbs		$
Plastics	cy or lbs		$
Other:	cy or lbs		$

16. Check (✓) whichever applies:

____ The amount recycled listed in Question 15 is <u>in addition</u> to the amount of refuse listed in Question 7.

____ The amount recycled listed in Question 15 is included in the amount of refuse listed in Question 7.

17. Please check (✓) any of the following services offered by or products developed by your facility to DeKalb residents or businesses:

_____ accepts materials on-site or provides recycling collection services to residents (e.g. newspaper, aluminum, tin, plastics, glass, etc.)

_____ accepts materials on-site or provides recycling collection services to businesses (e.g. office paper, corrugated paper, metals, plastics, glass, asphalt, construction/demolition debris, film, lead-acid batteries, motor oil, rubber/tires, textiles/rags, cooking grease, solvents, etc.)

_____ accepts materials on-site or provides reusable item collection services to residents (e.g. books, clothing, food, furniture, equipment, paint, milk delivery, diaper services, etc.)

_____ accepts materials on-site or provides reusable item collection services to businesses (e.g. barrels and drums, cartridges/ribbons, pallets/skids, books, clothing, food, furniture, equipment, etc.)

_____ manufactures or distributes products made from post-consumer recycled materials or reused materials

_____ other (solid waste management oriented service or product)

If you have checked any of the statements above, please describe your service or product and enclose any additional information. Information collected from Question 17 may be assembled into a recycling/reuse directory for DeKalb County.

_____

_____

_____

_____

Thanks for your time and effort. Questions and comments may be directed to Amanda Rutter of Patrick Engineering at (708) 790-8508. Please return the survey by May 15 to:
Ron Matekaitis, City Attorney, City of DeKalb, 200 S. 4th Street, DeKalb, IL, 60115.

WORKSHEET TO DETERMINE YOUR COMPANY'S REFUSE DISPOSAL

This simple worksheet will help you calculate your company's annual refuse disposal in case you do not have records available. Please include this worksheet with your survey.

First, what container does the refuse hauler collect your refuse from?

A. Dumpster or compactor (do Part A only).
B. Cans or bags (do Part B only).

PART A

What is the capacity of your dumpster or compactor? (If you don't know, see Note below). _____ cubic yards

How many dumpsters or compactors of this size do you have?

How many times per week is each container emptied? x_____ containers

What percentage of the container is full at the time of pickup? x_____ collections per week

x_____ % full
÷ 100

Compute the numbers to find the total. x 52 weeks per year

= _____ Total cubic yards

Repeat the above calculations for additional dumpsters or compactors of different size. Please write the total(s) in the appropriate blank(s) to the right.

_____ Total cubic yards in dumpsters per year

_____ Total cubic yards in compactors per year

PART B

NOTE: Please calculate according to Part A if you are able to.

What size can or bag do you use? (Typical refuse bags are 30 or 33 gallons). _____ gallons

How many cans or bags of refuse do you throw away in a week? x_____ bags per week

What percentage of the can or bag is full at the time of pickup? (If you use bags, please enter 50). x_____ % full
÷ 100

x 52 weeks per year

÷ 212 gallons per cubic yard

Compute the numbers to find the quantity of refuse discarded. = _____ Total cubic yards

DEKALB COUNTY INCINERATION SURVEY

Please complete this survey concerning the use of your on-site incinerator.

Name of Contact Person _____

Title _____ Phone _____

Business or Institution _____

1. Is the incinerator on your premises still in operation?

   _____ Yes _____ No

   If not, are there any plans to operate it in the future?

   _____ Yes _____ No

   Comment _____

   _____

   In what year was the incinerator installed (approximately)? _____

2. Please estimate the total quantity of refuse that is currently being incinerated. (Fill in one that applies).

   _____ pounds per day (assume 365 days per year)

   _____ pounds per work day (250 days per year)

   _____ pounds per week

   _____ pounds per month

   _____ cubic yards per _____

   If none of these apply, please estimate the total quantity or volume of refuse incinerated per year:

   _____

3. How often is the incinerator operated? (Check one that applies.)

   _____ daily _____ monthly

   _____ weekly _____ intermittently

4. Please estimate the proportionate amounts (by weight) of refuses that are incinerated.

____ % paper	____ % medical waste
____ % cardboard	____ % food
____ % plastics	____ % wood
____ % textiles	____ % stone/dirt/ceramics
____ % metals	____ % other _____
____ % yard debris	____ % other _____

5. Is the energy that is produced by the incinerator used in some way?

   _____ Yes _____ No

   If energy is captured, describe how it is used.

   _____

   _____

6. Where is the ash taken after incineration?

   _____

   _____

Thank you for your time and effort. Questions and comments may be directed to Amanda Rutter of Patrick Engineering at (708) 790-8508. Please return the survey by May 15, 1993 to: Ron Matekaitis, City Attorney, City of DeKalb, 200 S. 4th Street, DeKalb, IL, 60015.

APPENDIX C

HAULER - LANDFILL METHODOLOGY

HAULER - LANDFILL DATA

This appendix describes how hauler and landfill data was utilized to determine waste generation estimates. The goal of analyzing hauler and landfill data was to develop reliable waste generation estimates for the following sectors: general household waste, commercial/institutional, industrial and construction/demolition. The data was also used to determine the level of importation and exportation of waste into and out of DeKalb County.

DeKalb County Landfill Data. To develop estimates of waste landfilled, an interview was conducted with the operator of the DeKalb County Landfill. The operator supplied the following records pertaining to waste disposal: Breakdown of Incoming Waste for 1992 (by hauler in tons and in yards); quarterly Origin of Waste reports from July 1991 through December 1992 (by hauler and county); and a Monthly Yardage Report for 1992.

Imported Waste. Upon analysis of waste quantity and waste origin information from the landfill, the quantities of waste coming into the DeKalb County Landfill were determined.

WASTE LANDFILLED AT DEKALB COUNTY LANDFILL (1992)		
Municipal Waste (In-County)	+	71,156 tons
Municipal Waste (Out-of-County)	+	6,223 tons
Special Waste (In-County)	+	1,560 tons
Special Waste (Out-of-County)	+	269 tons
Total		79,208 tons

Hauler's Data. Data was collected from haulers to verify landfill data and to supply additional information not available from the landfill. Data requested from each hauler included an estimate of the total amount of refuse collected in DeKalb County in 1992; the disposal site utilized for DeKalb County waste; the amount of DeKalb County waste disposed of in out-of-county landfills; and the breakdown (by weight) of general household waste, commercial/institutional/industrial waste and construction/demolition waste collected. In most cases, haulers did not have detailed records available, so they estimated the tons of refuse collected by multiplying the loads of waste collected in DeKalb County per week by the approximate weight of each load. Data was collected from Browning Ferris Industries (BFI) - Rockford, Community Disposal, DeKalb County Disposal (now part of WMX), Illinois Valley Recycling, Marengo Disposal, Monarch Disposal, Tri-County Disposal (TCD) - WMX and Waste Management - West (WMX).

Exported Waste. After taking into account the quantities of waste disposed of at the DeKalb County Landfill, the quantity of waste disposed of out-of-county was determined, through surveys and telephone discussions with haulers.

DEKALB COUNTY WASTE LANDFILLED OF OUT-OF-COUNTY (1992)		
Davis Junction Landfill	+	17 tons
Morris Community Landfill	+	17 tons
Peru Municipal Landfill	+	67 tons
Rochelle Municipal Landfill	+	618 tons
States Land Improvement Landfill	+	253 tons
Winnebago Reclamation Landfill	+	225 tons
Woodland Landfill	+	229 tons
Total		1,426 tons

Combination of Hauler and Landfill Data. Landfill data and hauler data were analyzed together to develop waste generation estimates and the breakdown of waste for DeKalb County.

Waste Landfilled. In order to determine the quantity of waste landfilled in DeKalb County, the quantities of in-county waste disposed of at the DeKalb County Landfill (incoming non-special waste at DeKalb County minus imported waste) were added to the quantities of DeKalb County waste disposed of at out-of-county facilities.

DEKALB COUNTY WASTE LANDFILLED (1992)		
DCW Disposed of in DeKalb County Landfill	+	71,156 tons
DCW Disposed of Out-of-County landfills	+	1,426 tons
Total		72,582 tons

Breakdown of Waste. Next, landfill and hauler data was used to determine the breakdown of waste (i.e., general household waste, commercial/institutional/industrial waste and construction/demolition debris). Haulers were requested to estimate the breakdown of DeKalb County waste collected, based on the number of accounts and types of material collected by each sector. The average general household waste collected per household was calculated for each hauler. The averages were compared to insure that there was some consistency among the haulers estimates. The origin of the remaining waste quantities were determined by the type of vendor depositing the waste (for example, NIU would be considered to be CII waste) and the landfill operator's estimations for the cash and general contractors waste quantities.

BREAKDOWN OF DEKALB COUNTY WASTE LANDFILLED (1992)		
General Household Waste	+	28,760 tons
Commercial/Institutional/Industrial	+	27,606 tons
Construction/Demolition	+	13,971 tons
Total DCW Landfilled by Haulers		72,582 tons

Comments. Overall, the results from the hauler-landfill data were found to be fairly consistent with other data collection methods including the waste weigh field study and the commercial and industrial surveys. However, several limitations of the analysis exist. It is difficult to determine the accuracy of hauler estimates of waste quantities and origin breakdowns. Also, it is difficult to determine the accuracy of conversion factors utilized. The analysis does not account for waste independently hauled out-of-county.

APPENDIX D

COMMERCIAL/INDUSTRIAL ESTABLISHMENT SURVEY METHODOLOGY

COMMERCIAL/INDUSTRIAL ESTABLISHMENT SURVEY METHODOLOGY

A survey was sent to commercial/institutional and industrial establishments to gather information of refuse disposal. A total of 370 surveys were sent to commercial/institutional establishments and 129 responses were received (34 percent response rate). A total of 77 surveys were sent to industrial establishments and 26 responses were received (34 percent response rate).

The establishment surveys requested information regarding type of business, number of employees, quantity and composition of waste disposed. This information was used to estimate the quantity of commercial/institutional and industrial waste disposed.

The first step in the analysis was to determine which surveys had "good" data. Some of the considerations involved in this determination included:

- Was the response complete, indicating waste quantity and composition estimations and the number of employees as requested?
- Were the respondents answers practical, such as estimated waste quantities?
- How did the respondent determine the information submitted?
- Did the establishment employ more than five employees? (Firms with less than five employees since larger establishments have been found to provide more accurate data)

A total of 24 industrial survey and 50 commercial/institutional survey responses were judged to have good data concerning the quantity of waste disposed and the composition of their waste stream. The second step in the analysis was to input the data from these surveys into a spreadsheet.

The establishments were grouped according to the general S.I.C. classifications and an average waste disposal rate (weighted by number of employees) was calculated for each SIC classification. This was done because different types of businesses dispose and recycle different quantities of waste. The stratification of the sample in this case allows a better estimate of the total since it allows the different components of county-wide employment to be represented correctly. Without stratification, several potential biases would be introduced: 1) certain components of employment may not be represented correctly in the survey responses (e.g., manufacturing businesses typically have more knowledge of their waste stream and would be expected to return these surveys at a higher rate); and, 2) even if the survey responses were representative, changes in the components of employment could occur in the future and estimates based on the current overall average would then be inaccurate. The survey responses are listed in Table D-1. Table D-2 presents a composite of the survey results.

TABLE D-1
COMMERCIAL/INSTITUTIONAL/INDUSTRIAL ESTABLISHMENT SURVEY FINDINGS

SIC CODE #	# OF EMPLOYEES	REFUSE/YR (Tons)	REFUSE/YR (PED)
14	28	21	4.1
Subtotal	28	21	4.1
20	72.5	166	12.5
20	336	926	15.1
20	15	90	32.9
23	6.5	39	32.9
26	47	113	13.2
27	6.5	221	186.3
27	85.5	59	3.7
27	49	106	11.8
27	112	392	19.2
27	182	68	2.1
28	100	13	0.7
28	8.5	7	4.2
28	4	10	13.4
29	33	8	1.4
30	25	45	9.9
30	122	298	13.4
33	250	117	2.6
34	8	5	3.3
34	2	1	2.0
34	7.5	23	16.4
33	110	351	17.5
34	160	1181	40.5
34	8	7	4.5
34	31	23	4.0
34	140	108	4.2
34	150	52	1.9
34	9	15	8.9

TABLE D-1
COMMERCIAL/INSTITUTIONAL/INDUSTRIAL ESTABLISHMENT SURVEY FINDINGS

SIC CODE #	# OF EMPLOYEES	REFUSE/YR (Tons)	REFUSE/YR (PED)
35	173.5	88	2.8
35	412.5	139	1.9
35	126	128	5.5
35	10	9	5.1
35	3	7	11.9
35	6.5	5	3.8
30	280	513	10.0
35	8	44	30.0
36	343	150	2.4
36	3	2	4.1
36	23	12	2.8
36	405	299	4.0
36	94.5	370	21.4
36	405	113	1.5
36	108	78	4.0
36	350	317	5.0
36	124	90	4.0
36	5.5	1	1.0
38	150	91	3.3
38	4	2	3.4
Subtotal	5104.5	6898	7.4
Industrial Total	5133	6918	7.4
41	70	23	1.8
48	24	20	4.5
48	50	113	12.3
49	116	1	0.1
49	5	3	3.3
Subtotal	265	160	3.3
50	128.5	150	6.4

TABLE D-1
COMMERCIAL/INSTITUTIONAL/INDUSTRIAL ESTABLISHMENT SURVEY FINDINGS

SIC CODE #	# OF EMPLOYEES	REFUSE/YR (Tons)	REFUSE/YR (PED)
51	16	39	13.5
51	12.5	36	15.7
53	50	49	5.3
55	31.5	33	5.7
55	6.5	16	13.7
55	5	18	19.2
56	2.5	1	2.0
57	5.5	13	13.0
58	2.5	20	42.7
59	75	182	13.3
59	4	14	18.8
59	4.5	2	2.8
59	3	7	11.9
59	8	10	6.7
59	40	78	10.7
Subtotal	395	666	9.2
60	40	50	6.8
60	46	24	2.9
63	14.5	2	0.8
64	9	31	19.0
65	2.5	519	1137.0
65	1	65	356.2
Subtotal	113	691	33.5
72	4.5	5	5.9
73	4	1	1.9
73	2	3	8.9
74	8	13	8.9
76	1	0	2.5
76	6.5	7	6.2

TABLE D-1
COMMERCIAL/INSTITUTIONAL/INDUSTRIAL ESTABLISHMENT SURVEY FINDINGS

SIC CODE #	# OF EMPLOYEES	REFUSE/YR (Tons)	REFUSE/YR (PED)
77	3.5	2	3.5
79	43.5	23	2.8
80	36	20	3.0
80	4.5	3	3.3
80	7	5	4.0
80	401.5	199	2.7
80	110	39	1.9
80	168	312	10.2
80	4.5	3	3.3
82	395	481	6.7
83	105	117	6.1
83	24.5	78	17.4
86	36	25	3.8
89	3.5	2	2.9
89	61.5	94	8.3
99	37	5	0.8
Subtotal	1467	1437	5.4
82	285	214	4.1
82	5818	2243	2.1
Subtotal	6103	245.7	2.2
99	165	109	3.6
99	175	94	2.9
Subtotal	340	203	3.3
Comm./Inst. Total	8683	5613	3.5
Total	13815.5	12532	5.0

TABLE D-2
OVERVIEW OF ESTABLISHMENT SURVEY FINDINGS

	S.I.C. Code	Number of Companies	Number of Employees	Disposed (PED)
Industrial Subtotal	1000-4999	48	5132.5	7.4
Mining & Construction	1000-1999	1	28	4.1
Manufacturing	2000-3999	47	5104.5	6.1
Comm./Inst. Subtotal	4000-9000	54	8683	3.5
TCU	4000-4999	5	265	3.3
Trade	5000-5999	16	395	9.2
FIRE	6000-6999	6	112.5	33.5
Services	7000-8999	22	1467	8.5
Univ./Comm. College	8200	2	6103	2.2
Government	9900	2	340	3.3
Total	1000-9900	102	13815.5	5.0

The refuse rates (by SIC category) from the survey were applied to Livingston County's employment estimates from Woods and Poole (by SIC category) to determine the amount of establishment waste landfilled in Livingston County. Tables 4-5 in Chapter 4 display this information.

The reliability of the establishment surveys are uncertain for several reasons. One of the issues of concern with the business survey was that many businesses (especially smaller businesses) would not have records or other accurate means of determining the quantity of waste they disposed. A work sheet was constructed and included with the survey so that more small businesses would respond and that these businesses could estimate their waste in a systematic manner. Another concern is that a large majority of the establishments which submitted surveys and also participated in the waste weigh field study were found to overestimate the amount of refuse disposed on the survey. This may indicate the surveys, in general, may have overestimated waste quantities.

APPENDIX E

FIELD STUDY METHODOLOGY

FIELD STUDY METHODOLOGY

This appendix describes the general household waste weighing field studies in more detail. The goal of the general household waste weighing study was to determine the average quantity of refuse, recyclables and landscape waste discarded per household per week and to test the reliability of the other estimates developed by the hauler/landfill surveys. The aim of the field study was to obtain a large and representative sample so that the average refuse, recycling and landscape waste rates acquired would be statistically accurate.

The initial step in conducting the general household waste study was to select the study site. The City of DeKalb and the City of Sycamore were chosen in order to collect a large enough sample. The hauling company operating in these municipalities was questioned concerning the days and times they collect materials in these municipalities and the locations within each municipality they collect materials in. Once this information was collected, a schedule for the field study was constructed.

The field studies consisted of sampling refuse, recyclables and landscape waste weights from single family households at two different times of the year. The first waste weigh study was performed on Tuesday, August 10 and Friday, August 13, 1993 and the second was performed on November x and x, 1993. For both waste weigh analysis, the recyclables and landscape waste were weighed in DeKalb and Sycamore on Tuesday and the refuse was weighed in DeKalb and Sycamore on Friday. The schedule for the study was constructed so that PEI's employees arrived in the municipalities approximately one-half hour before the hauling company. In some cases, the hours of waste collection made it difficult to obtain a large enough sample of data points.

Data collection was performed by two Patrick Engineering employees with a pickup truck and a 2' x 2' platform scale with digital read-out. One employee weighed each of the materials set at the curb separately (refuse, recyclables and landscape waste). The weights were called out to the driver to be recorded. When the materials were set out in a container, the container and the material were weighed together. The driver would indicate in the records what type of container was used next to the weight of the materials. The average weight of the container type was later subtracted during the data analysis. Average container weights were determined by weighing empty containers of the same general type and then averaging. The general types of containers that were coded had average container weights of x pounds to x pounds.

The employees conducting the study weighed materials in different neighborhoods of each municipality in order to obtain a representative sample. In some situations it was not clear whether the waste on the curb was from only one household or not. In these cases, the household was skipped. Households with home businesses were also skipped. In addition, households were skipped if they had burn barrels which appeared upon inspection to have been used recently, even though waste or ash was sometimes placed out for collection at these households.

The results of the general household waste weighing study for DeKalb County are summarized in Table E-1.

TABLE E-1
GENERAL HOUSEHOLD WASTE WEIGH RESULTS: AUGUST AND NOVEMBER 1993

	8/93	11/93	Total
City of DeKalb:			
Households Sampled	102	174	276
Refuse Weight (lbs/week)	4,491	5,418	9,909
Average Refuse/Household (lbs/week)	44	31	36
Recyclables Weight (lbs/week)	995	1,856	2,851
Average Recyclables/Household (lbs/week)	9.8	11	10
Households with Landscape Waste Set Out	NA	22	22
Landscape Waste Weight (lbs/week)	NA	591	591
Average Landscape Waste/Household Sampled (lbs/week)	NA	3.4	2.1
Average Landscape Waste/Participating Household (lbs/week)	NA	26.9	26.9
Municipal Waste Recycling Rate	18%	31%	26%
City of Sycamore:			
Households Sampled	137	223	360
Refuse Weight (lbs/week)	4,617	6,490	11,107
Average Refuse/Household (lbs/week)	33.7	29	31
Recyclables Weight (lbs/week)	1981	2,957	4,938
Recyclables/Household (lbs/week)	14.5	13	13.7
Households with Landscape Waste Set Out	36	6	42
Landscape Waste Weight (lbs/week)	1,252	119	1,371
Average Landscape Waste/Household Sampled (lbs/week)	9.1	0.5	3.8
Average Landscape Waste/Participating Household (lbs/week)	34.8	19.8	32.6
Municipal Waste Recycling Rate	41%	32%	36%

TABLE E-1 GENERAL HOUSEHOLD WASTE WEIGH RESULTS: AUGUST AND NOVEMBER 1993			
Combined:			
Households Sampled	239	397	636
Refuse Weight (lbs/week)	9,108	11,908	21,016
Average Refuse/Household (lbs/week)	38.1	30	33
Recyclables Weight (lbs/week)	2,976	4,813	7,789
Recyclables (lbs/week)	12.5	12	12
Households with Landscape Waste Set Out	NA	28	64
Landscape Waste Weight (lbs/week)	NA	710	1,962
Average Landscape Waste/Household Sampled (lbs/week)	NA	1.8	3.1
Average Landscape Waste/Participating Household (lbs/week)	NA	25.4	30.7
Municipal Waste Recycling Rate	32%	32%	32%

There are five principal issues to be discussed regarding the general household waste weighing study. First, bulky wastes (e.g., appliances, mattresses) were not weighed through this methodology. These wastes are typically collected on special days or are taken directly to the landfill by the homeowner. In addition, some haulers and municipalities make special arrangements to collect bulky wastes at the resident's curbside for disposal. Thus, bulky wastes were not weighed in this study and the data may underestimate the quantity of waste disposed per household per week.

A second potential bias in the research design is that the study has no means of adjusting for those households that place more than one week's refuse out for collection. This may occur if a homeowner did not take out the refuse in time for collection the previous week. This bias may lead to an overestimation of the quantity of waste disposed per household per week.

A third factor which could bias the general household waste research results is that in municipalities where waste collection is arranged through private contracts, some households may combine their waste with a neighbor's or a relative's waste and pay a single disposal bill. Since the waste is at the curb at one household, there is no way of knowing that the waste is actually from more than one household during the weighing study. Thus, this bias may lead to an overestimation of the quantity of waste disposed per household per week.

A fourth factor which should be considered in an analysis of the results of the general household waste weighing study is that the limited number of sampling periods may not be sufficient to catch seasonal or cyclical trends that may exist. For instance, if the heaviest waste generation period of the year is often during January or the summer months, the results obtained during the sampling period in this study may not be representative of the remaining months of the year. The average value obtained in this study may therefore be over-estimated.

A fifth factor which should be considered in an analysis of the results of the waste weighing study is that the limited number of sampling periods may not be sufficient to catch seasonal or cyclical trends that may exist. According to landfill records, the heaviest waste generation period of the year is during the spring and summer months and the low period is during fall and winter months. To develop average generation rates, sampling was conducted during a high period (in the summer) and a low period (in the fall). the results obtained during the sampling periods, however, still may not be representative of the remaining months of the year. In addition to seasonal trends in waste disposal, there may be cyclical trends or a long-term trend. For instance, waste disposal may decrease slightly during recessionary economic periods. The effect of any such trends is difficult to determine.

The field studies provided significant contributions to the research conducted in this study. The residential study provided hard and relatively reliable data on the quantity of waste disposed by residents. Although these studies have certain limitations, they do provide reliable data, especially to verify other waste generation data, such as the hauler/landfill data.

APPENDIX F

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

On Wednesday, December 8, 1993, a public hearing was held at the DeKalb Municipal Building to review the DeKalb County Waste Management Needs Assessment. The following are the questions asked by citizens attending the public meeting and the responses developed from the information gathered during the drafting of the Needs Assessment:

1. *Why were plastics more by weight than glass in the composition study?*

The waste composition studies performed recently for Ogle, Whiteside, and McLean Counties concluded that plastic constitutes a larger percentage of the municipal waste stream, by weight, than glass. While this may seem surprising considering the lightweight plastic packaging items most consumers are familiar with, the number of plastic items that are manufactured and discarded is rapidly growing. According to the United States Environmental Protection Agency study, Characterization of Municipal Solid Waste in the United States: 1992 Update, plastics made up approximately 9.8% of the national municipal waste stream by weight in 1990, while glass made up 6.5% by weight in 1990.

2. *Why did Patrick Engineering's waste generation study come up with a lower number than the City of DeKalb's study?*

Patrick Engineering Inc. (PEI) performed two comprehensive waste generation studies in DeKalb and Sycamore. One study was performed in the spring of 1993 and, to account for the seasonal fluctuations in waste generation, the other was conducted in the fall of 1993. A total of 636 households were sampled in various neighborhoods of the two cities. The City of DeKalb also performed waste generation studies, but after comparing the data from DeKalb's study with PEI's study, it became apparent the DeKalb County's study involved sampling in different neighborhoods than PEI's study and at different times of the year.

APPENDIX G

IEPA REVIEW

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
NEEDS ASSESSMENT REVIEW

This appendix includes correspondence between the Illinois Environmental Protection Agency and DeKalb County concerning the DeKalb County Waste Management Needs Assessment. The following items are enclosed:

1. The January 21, 1994 letter from Mr. Robert McGrew, Project Manager of the Planning and Grants Unit in the Solid Waste Management Section of the IEPA

2. The April 1, 1994 response to Mr. McGrew's comments concerning the Needs Assessment from Mr. Ronald G. Matekaitis, DeKalb County Solid Waste Management Committee and Patrick Engineering Inc.

3. The April 13, 1994 letter from Mr. Robert McGrew verifying that the DeKalb County Waste Management Needs Assessment meets all applicable government requirements for such a document

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/785-8604

January 21, 1994

Mr. Ron Matekaitis
DeKalb County
200 South 4th Street
DeKalb, Illinois 60115

Re: SWM Grant/DeKalb County/Planning/Correspondence

Dear Mr. Matekaitis:

I have completed my review of DeKalb County's Needs Assessment received December 8, 1993. I have the following comments which should improve or correct the document.

General Comments

1. The correct term used in the Solid Waste Planning and Recycling Act (SWPRA) is general household waste in place of residential waste. Revise where appropriate.

2 The correct term used in the Environmental Protection Act (Act) and the Solid Waste Planning and Recycling Act (SWPRA) is municipal waste, not municipal solid waste or solid waste. Revise where appropriate throughout the document.

3. Clarify what demographic data was used to determine that DeKalb County data should be compared to counties of 50,000 and under in population. According to the 1990 census, DeKalb County has a population of just under 78 thousand and a population density of 123 persons/mile and is expected to grow. Some counties which might be more comparable would be: Adams County with a population of 66 thousand and a population density of just under 76 persons per mile; Vermilion County with as population of 88 thousand and a population density of 98; or McLean County with a population of 129 thousand and a population density of 110. Revise as necessary.

4. The current citation for the Solid Waste Planning and Recycling Act is 415 ILCS 15/1 et. seq. Revise accordingly throughout the document.

Specific Comments

5. P. iv, Fig. 4-2. Revise the entry to "DeKalb County Waste Generation" to match the figure on page 4-26.

6. P. 1, Commercial Waste. Describe the exact definition of commercial waste used in the Needs Assessment.

7. P. 5, General Household Waste (Residential Waste). Describe the exact definition of general household waste (residential waste) used in the report.

8. P. ES-2, Para. 1, Sentence 1. Explain the difference between a mobile home and a trailer or remove the term "trailers". This change should be made here and other places where this term is used.

   Para. 5, Waste Composition. Clarify how the composition of DeKalb County's waste was estimated since a weigh/sort study was not undertaken.

9. P. ES-3, Para. 5, Sentence 1. Revise "predominantly" to "primarily". Make this revision here and other places where this term is used.

10. P. ES-4, Para. 5, Sentence 1. Landscape waste is considered municipal waste and should be included as such. It is included on page ES-5 and the presentation of data should be consistent throughout.

11. P. 2-3, Haulers. Revise the first sentence by substituting "by" for "through".

12. P. 3-1, Para. 1, Sentence 2. Clarify why 1995 was used for the base year when the data was collected in 1993.

13. P. 4-4, Incinerated Quantities of General Household Waste (Residential Waste). Change all references of "homeowner burning" to "incineration of general household waste by the homeowner." Revise the entire section and provide actual estimates of household waste incineration by the homeowner as was provided in the Schuyler County and other Needs Assessments.

14. P. 4-8, Table 4-5. Page ES-4, paragraph 5, sentence 3, presents NIU internal recycling program and elsewhere the document presents data from NIU student association recycling center. Clarify which NIU program is presented in this table.

15. P. 4-9, Composted and Land Applied Quantities of General Household (Residential) Waste. It is unclear whether the amount of general household landscape waste collected for composting is included in the recycling rate. Not till

Chapter 6, page 6-25 is it apparent that the amounts composted are included in the recycling rate. Revise this section accordingly.

Para. 2. In order to include the amounts of general household landscape waste composted in the recycling rate, the composted material must be returned to the economic mainstream or replace other raw materials for fertilizer, soil conditioner or mulch. Therefore, revise this paragraph to include a discussion of how the composted material is used.

16. P. 4-17, Para. 2. Provisions to eliminate double counting of materials collected for recycling should be explained in this paragraph.

17. P. 4-18, Para. 1, Sentence 1. I suggest that it be clarified what the "1,739 tons" are in addition to since the text is physically separated by 2 charts.

    Sentence 2. I suggest that the "1,248 tons" be further explained. See reasoning above.

18. P. 4-21, Para. 1. Explain which counties were used for comparison and how they are demographically similar to DeKalb County. See comment #3.

19. P. 5-1, Para. 2, Sentence 5. Explain how these three counties have similar demographics to DeKalb County. See comment #3.

20. P. 6-16, Table 6-6. Revise the typo in the numbering of notes in the legend.

21. P. 6-17, Para. 1, Sentence 1. Insert "with" in the appropriate place.

22. P. 6-22, Para. 1, Total Recycled. Landscape waste is considered municipal waste. If the material is sold, given away or used as a soil amendment or in some way returned to the economic mainstream it is recycled and should be included in this section. Revise accordingly. See Comment #15.

23. P. 6-24, Para. 1, Last sentence. Clarified that the landscape waste that is burned is not counted in the recycling totals. See comment #15.

24. P. 6-26, Table 6-12, Composted/Land-Applied. The general household (residential) amount contains a typo.

25. P. 9-6. Bullet 1. This bullet states that 21% of DeKalb County's municipal waste will be recycled. It further states that 10% will be composted. On page 6-25, in the first full paragraph, the amount recycled and composted are combined into one recycling rate of 31%. The presentation of this date should be consistent throughout the report. Revise where appropriate.

Should you have questions, feel free to contact me.

Sincerely,

Robert McGrew

Robert McGrew, Project Manager
Planning and Grants Unit
Solid Waste Management Section
Division of Land Pollution Control
Bureau of Land

Ronald G. Matekaitis
Attorney at Law
200 South Fourth Street
DeKalb, Illinois 60115
(815) 748-2093

April 1, 1994

Mr. Robert McGrew, Project Manager
Planning and Grants Unit, Solid Waste Management Section
Division of Land Pollution Control, Bureau of Land
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62794-9276

Dear Mr. McGrew:

In regard to the DeKalb County Solid Waste Needs Assessment submitted in December, 1993, and your suggested revisions as stated in your January 21, 1994 letter, we would like this opportunity to review the revisions incorporated into the report.

Revisions to the DeKalb County Needs Assessment include IEPA recommendations listed in your letter and revisions to the report made by Patrick Engineering, Inc. It is understood that the IEPA recommended changes are not compulsory. However, the policy issues surrounding these recommendations have been discussed and addressed by DeKalb County Citizen's Advisory Committee representatives.

We look forward to your complete review of the enclosed Revised Needs Assessment. Laurie Borgerding of Patrick Engineering will contact you on April 14th to discuss your comments on the resubmittal of the DeKalb County Needs Assessment.

If you have any further comments or questions concerning this report, please contact me at (815) 748-2000 or Laurie Borgerding of Patrick Engineering, Inc. at (312) 220-0720.

Sincerely,

R. Matekaitis

Ronald G. Matekaitis
DeKalb County Solid Waste
Management Committee Chairman

RGM:kmc

IEPA RECOMMENDED REVISIONS
DECEMBER 1993 DRAFT DEKALB COUNTY NEEDS ASSESSMENT

1. The correct term used in the Solid Waste Planning and Recycling Act (SWPRA) is general household waste in place of residential waste. Revise where appropriate.

   The term residential waste has been replaced by general household waste as requested.

2. The correct term used in the Environmental Protection Act (Act) and the Solid Waste Planning and Recycling Act (SWPRA) is municipal waste, not municipal solid waste or solid waste. Revise where appropriate throughout the document.

   The references to municipal solid waste have been corrected to municipal waste as requested.

3. Clarify what demographic data was used to determine that DeKalb County data should be compared to counties of 50,000 and under in population. According to the 1990 census, DeKalb County has a population of **just under 78** thousand and a population **density of 123** persons/mile and is expected to grow. Some counties which might be more comparable would be: Adams County with a population of 66 thousand and a population density of just under 76 persons per mile; Vermilion County with as [sic] population of 88 thousand and a population density of 98; or McLean County with a population of 129 thousand and a population density of 110. Revise as necessary.

   The comparisons made on pages 4-11, 4-20 and 4-21 to 14 studies of counties in Illinois with a population of under 50,000 have been omitted. The waste generation rate comparisons are now made to a recent compilation of data from the Needs Assessments of 10 Illinois counties with populations under 100,000. This data allows for more accurate comparison to DeKalb County.

4. The current citation for the Solid Waste Planning and Recycling Act is 415 ILCS 15/1 et. seq. Revise accordingly throughout the document.

   Any citations for SWPRA have been changed to 415 ILCS 15/1 et. seq.

5. P. iv, Fig. 4-2. Revise the Entry to "DeKalb County Waste Generation" to match the figure on page 4-26.

   Figure 4-2 was revised as recommended.

6. P. 1, Commercial Waste. Describe the exact definition of commercial waste used in the Needs Assessment.

   Commercial Waste is defined on Page 1 of the Needs Assessment. The use of the term Commercial Waste is consistent with this definition throughout the report.

7. P. 5, General Household Waste (Residential Waste). Describe the exact definition of general household waste (residential waste) used in the report.

General Household Waste is defined on Page 2 of the Needs Assessment. The use of the term General Household Waste is consistent with this definition throughout the report.

8. P. ES-2, Para. 1, Sentence 1. Explain the difference between a mobile home and a trailer or remove the term "trailers". This change would be made here and other places where this term is used.

The term "trailer" connotates a less permanent dwelling than a mobile home, however, references to trailers were removed as recommended in order to avoid confusion.

Para. 5, Waste Composition. Clarify how the composition of DeKalb County's waste was estimated since a weigh/sort study was not undertaken.

Paragraph 5 of the Executive Summary presents a summary of the pertinent data developed in Chapter Five, Waste Composition. Chapter Five includes a full explanation of the methods used in gathering and managing this data.

9. P. ES-3, Para. 5, Sentence 1. Revise "predominantly" to "primarily". Make this revision here and other places where this term is used.

Primarily has been substituted for predominantly as recommended.

10. P. ES-4, Para. 5, Sentence 1. Landscape waste is considered municipal waste and should be included as such. It is included on page ES-5 and the presentation of data should be consistent throughout.

Sentence 1 on Page ES-4 has been changed to read, "DeKalb County is expected to recycle 26,814 tons of municipal waste". This figure reflects the landscape waste composted and land applied in DeKalb County. Landscape waste is reflected as a component of municipal waste wherever that quantity is discussed in the report.

11. P. 2-3, Haulers. Revise the first sentence by substituting "by" for "through".

The substitution was made as advised.

12. P. 3-1, Para. 1, Sentence 2. Clarify why 1995 was used for the base year when the data was collected in 1993.

The demographic data presented in Chapter 3 is based on the most recent data available during the collection period. The publication dates of the sources of this data range from 1988 to 1993. Projections were made beginning in 1990 and were projected through 2015. The projections remain the same whatever year is chosen as the base year. It is estimated that the DeKalb County Solid Waste Management Plan will be first implemented in 1995 and will be utilized for the 20 years following that date. Therefore, 1995 was chosen as the base date, even though data and projections were presented for the entire period between 1990 and 2015.

13. P. 4-4, Incinerated Quantities of General Household Waste (Residential Waste). Change all references of "homeowner burning" to "incineration of general household waste by the homeowner". Revise the entire section and provide actual estimates of household waste incineration by the homeowner as was provided in the Schuyler County and other Needs Assessments.

The phrase "homeowner burning" has been changed to "incineration of general household waste by the homeowner".

Actual estimates of incineration of general household waste were not provided because, as stated in Chapter 4, little if any incineration is occurring. The current presentation of data was approved by DeKalb County representatives using the logic that it is not worthwhile to estimate quantities that cannot be measured accurately and/or those which are insignificant in quantity.

Schuyler County is populated by approximately 7,500 people, with about 50% of that population living in unincorporated areas. Most of the municipalities and the unincorporated areas do not ban the burning of general household waste. It was estimated that 63% of the households burn their waste once or twice per week. In this case the determination of the amount of general household waste incinerated by the homeowner is integral to quantifying the amount of waste generated in the county. Most of the municipalities in DeKalb County, on the other hand, have bans on the incineration of general household waste by the homeowner. Unlike Schuyler County, most all homes in DeKalb County have collection service. According to surveys of all the municipalities in DeKalb County, less than 1% of general household waste is incinerated by the homeowner.

14. P. 4-8, Table 4-5. Page ES-4, paragraph 5, sentence 3, presents NIU internal recycling program and elsewhere the document presents data from NIU student association recycling center. Clarify which NIU program is presented in this table.

The title of Table 4-5 was changed to read NIU Student Association Recycling Center in place of NIU Recycling Center in order to clarify the source of the data.

15. P. 4-9, Composted and Land Applied Quantities of General Household (Residential) Waste. It is unclear whether the amount of general household landscape waste collected for composting is included in the recycling rate. Not till [sic] Chapter 6, page 6-25 is it apparent that the amounts composted are included in the recycling rate. Revise this section accordingly.

Para. 2. In order to include the amounts of general household landscape waste composted in the recycling rate, the composted material must be returned to the economic mainstream or replace other raw materials for fertilizer, soil conditioner, or mulch. Therefore, revise this paragraph to include a discussion of how the composted material is used.

Chapter 4, specifically pages 4-5 through 4-11, have been revised as recommended to reflect that the quantity of landscape waste composted and land applied is a component of the recycled quantity of general household waste. Chapter 6, specifically pages 6-22 through 6-26, have been revised as recommended to reflect that the quantity of landscape waste composted and land applied is a component of the total amount recycled in the municipal waste management system and the total waste management system.

A discussion of the methods by which landscape waste is returned to the economic mainstream and/or used in place of a raw material has been included in the section of Chapter 4 entitled Composted and Land Applied Quantity of Residential Waste.

16. P. 4-17, Para. 2. Provisions to eliminate double counting of materials collected for recycling should be explained in this paragraph.

A paragraph was added to the section of Chapter 4 entitled Recycled Quantities of Commercial/Institutional/Industrial (CII) Waste to explain the methodology used in gathering the data presented in this section. Specifically, that the hauler surveys included listings of all the CII establishments in DeKalb County, and asked haulers to name the establishments they provided recycling services to and the type of waste (municipal and non-municipal) recycled. Therefore, double counting is eliminated by the following methods: 1) separating the municipal waste recycling from the non-municipal waste recycling, and 2) determining if any recycled material had been double reported by cross checking the business surveys with the hauler surveys.

17. P. 4-18, Para. 1, Sentence 1. I suggest that it be clarified what the "1,739 tons" are in addition to since the text is physically separated by 2 charts.

Sentence 2. I suggest that the "1,248 tons" be further explained. See reasoning above.

Any figures that were distantly separated by tables or figures have been moved to adjoin the related text or were properly labelled as recommended.

18. P. 4-21, Para. 1. Explain which counties were used for comparison and how they are demographically similar to DeKalb County. See comment #3.

See answer to #3.

19. P. 5-1, Para. 2, Sentence 5. Explain how these three counties have similar demographics to DeKalb County. See comment #3.

Ogle County has a population of 45,957 and a population density of 60.6 persons per square mile. Whiteside County has a population of 60,186 with a population density of 87.6 persons per square mile. McLean County has a population of 129,180 and a population density of 110 persons per square mile. These counties are representative of DeKalb County which has a population of 77,932. More importantly, these three counties are the only counties with demographics similar to DeKalb County that performed reliable waste sorting studies. Adams County, for instance, did not perform a waste sorting study for their Needs Assessment or Solid Waste Management Plan, stating that "A study of this detail is not appropriate at this phase in the planning process". Please also see the response to comment #3 for further information.

20. P. 6-16, Table 6-6. Revise the typo in the numbering of notes in the legend.

The numbering has been corrected as advised.

21. P. 6-17, Para 1, Sentence 1. Insert "with" in the appropriate place.

Sentence 1 has been corrected as advised.

22. P. 6-22, Para. 1, Total Recycled. Landscape waste is considered municipal waste. If the material is sold, given away or used as a soil amendment or in some way returned to the economic mainstream it is recycled as should be included in this section. Revise accordingly. See Comment #15.

Please refer to the response to comment #15.

23. P. 6-24, Para. 1, Last sentence. Clarified [sic] that the landscape waste that is burned is not counted in the recycling totals. See comment #15.

Text was added to Paragraph 1 on Page 6-24 to clarify that while some Public Works Departments burn the landscape waste collected, those quantities are not included in the recycling totals.

24. P.6-26, Table 6-12, Composted/Land Applied. The general household (residential) amount contains a typo.

The amount of General Household Waste composted or land applied is 8,172 TPY. The table has been changed to reflect this.

25. P. 9-6. Bullet 1. This bullet states that 21% of DeKalb County's municipal waste will be recycled. It further states that 10% will be composted. On page 6-25, in the first full paragraph, the amount recycled and composted are combined into one recycling rate of 31%. The presentation of this date [sic] should be consistent throughout the report. Revise where appropriate.

The quantity of municipal waste composted or land applied has been included in the total amount recycled wherever that quantity is discussed in the report. Please also see the response to comment #15.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/785-8604

April 13, 1994

Mr. Ron Matekaitis
200 South 4th Street
DeKalb, IL 60115

Re: SWM Grant/DeKalb Co./Planning/Correspondence

Dear Mr. Matekaitis:

I have completed my review of DeKalb County's revised Phase I Needs Assessment. The comments contained in my January 21, 1994 review letter were adequately addressed in the final report received April 8, 1994. DeKalb County's Phase I Needs Assessment appears to meet the requirements of the Solid Waste Management Act, the Solid Waste Planning and Recycling Act and the Agency's 870 solid waste planning and grants rules and the work objectives specified in DeKalb County's March 3, 1993 grant application.

Please submit four additional copies of the Needs Assessment for our files.

Feel free to contact me if you should have questions.

Sincerely,

Robert McGrew, Project Manager
Planning and Grants Unit
Solid Waste Management Section
Division of Land Pollution Control
Bureau of Land