

**CRITERION 8:**

**“if the facility is to be located in a county where a county board has adopted a solid waste management plan consistent with the planning requirements of the Local Solid Waste Disposal Act or the Solid Waste Planning and Recycling Act, the facility is consistent with that plan”**

**415 ILCS 5/39.2(a)(viii)**

**CRITERION 8:  
SOLID WASTE MANAGEMENT PLAN CONSISTENCY ANALYSIS**

The Illinois Environmental Protection Act, at 415 ILCS 5/39.2 (a)(viii), requires that an applicant for a transfer station siting demonstrate that the proposed transfer station is consistent with a solid management waste plan adopted pursuant to the planning requirements of the Local Solid Waste Disposal Act or the Solid Waste Planning and Recycling Act. This report demonstrates that the proposed Lakeshore Recycling Systems, LLC West DuPage Recycling and Transfer Station is consistent with the DuPage County Solid Waste Management Plan in effect at the time this Application for Local Siting Approval was submitted.

**Prepared for:**

**LAKESHORE RECYCLING SYSTEMS, LLC  
WEST DUPAGE RECYCLING AND TRANSFER STATION  
1655 POWIS ROAD  
WEST CHICAGO, ILLINOIS  
DUPAGE COUNTY**

**Prepared by:**

**CIVIL & ENVIRONMENTAL CONSULTANTS, INC.  
NAPERVILLE, ILLINOIS**

**CEC Project 163-899**

**AUGUST 2022**

## 8.0 INTRODUCTION

The Illinois Environmental Protection Act requires that if a pollution control facility, such as the transfer station that is the subject of this Application for Local Siting Approval (Application), is to be located in a county where the county board has adopted a solid waste management plan pursuant to the Local Solid Waste Disposal Act or the Solid Waste Planning and Recycling Act, the transfer station must be consistent with the county plan. This demonstration must be consistent with the plan in effect when an application for siting approval is submitted for local approval. This report demonstrates that the Lakeshore Recycling Systems, LLC (LRS) West DuPage Recycling and Transfer Station (West DuPage RTS) is consistent with the DuPage County Solid Waste Management Plan (SWMP) now in effect.

## 8.1 WEST DUPAGE RECYCLING AND TRANSFER STATION FACILITY

The West DuPage RTS is located on an approximately 27.66-acre parcel located at 1655 Powis Road, West Chicago, DuPage County, Illinois. LRS currently operates a permitted solid waste management facility [Permit No. 2015-124-OP] that receives, sorts/separates, transfers and recycles construction or demolition debris (C&D) on approximately 6.11 acres of the site (C&D Recycling Facility). The C&D Recycling Facility includes the site entrance, the scale, the C&D transfer/screening building, the C&D sorting line building, and storage bunkers.

The site also includes an office, maintenance building, parking areas, additional hard surfaced areas, access controls, utilities, outdoor lighting, and a stormwater control system. As such, LRS currently performs other operations at the site that support its overall business. In addition, most of the infrastructure, personnel, and systems required to appropriately operate the West DuPage RTS are already present at the site. In summary, LRS currently conducts the following operations at the site:

- Receipt, sorting/separation, recycling and transfer of up to an annualized average of 1,250 tons per day of C&D;
- Staging and removal of recyclable materials;
- Mulch production and sales from recycled wood;
- Parking and maintenance of waste collection vehicles;
- Parking and maintenance of street sweepers;
- Parking and maintenance of portable restroom transportation vehicles;
- Staging and maintenance of containers, totes and portable toilets; and
- Dispatch and customer service (call center).

As proposed, West DuPage RTS will also perform the following operations:

- Receipt and transfer of non-hazardous municipal solid wastes (referred to as “MSW” or more generally as “solid waste”);
- Receipt, solidification and transfer of hydro excavation wastes;
- Receipt and transfer of single-stream recyclables (referred to as “SSR” or more generally as “recyclables”);
- Drop-off area for West Chicago residents of electrical/electronic devices; and
- Drop-off area for recyclables generated by residents and small businesses.

Loads of MSW from collection vehicles will be consolidated into larger loads for transport to an area landfill for disposal. Loads of hydro excavation wastes will be solidified and then transported

to an area landfill for disposal. Electronic waste from West Chicago citizens will be consolidated and transported to a recovery facility. Loads of recyclables from collection vehicles (and recyclables from residents) will be consolidated into larger loads for transport to a material recovery facility (MRF), such as LRS's MRF in Forest View, for re-use as a commodity. The proposed operations at the West DuPage RTS will allow for more efficient processing and/or transportation of these materials to a MRF or disposal facility (landfill). In addition, the expanded operations at the facility will allow for more improved recycling of the C&D.

West DuPage RTS is a unique facility due its desirable location, relatively large size, and diversity of operations, and will be a premier waste management and recycling facility in the State of Illinois.

Subject to Illinois Environmental Protection Agency (IEPA) permitting, West DuPage RTS is anticipated to accept up to 1,950 tons per day of which up to 650 tons per day may be MSW, up to 300 tons per day may be hydro excavation wastes, up to 750 tons per day may be C&D, and up to 250 tons per day may be SSR.

## 8.2 COUNTY SOLID WASTE PLANNING REQUIREMENTS

The Illinois Solid Waste Planning and Recycling Act (Waste Planning Act), initially promulgated in 1988, required that each county in the state adopt a twenty-year plan for managing the MSW generated within its boundaries [415 ILCS 15/1 et seq.]. Each county waste management plan is required to be updated and reviewed every five years.

Each SWMP is required to contain, at a minimum, the following provisions:

- A description of the origin, content, and weight or volume of municipal waste currently generated within the county's boundaries, and the origin, 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.
- A description of the facilities where municipal waste is currently being processed or disposed of and the remaining available permitted capacity of such facilities.
- A description of the facilities and programs that are proposed for the management of municipal waste generated within the county's boundaries during the next twenty years, including, but not limited to, their size, expected cost, and financing method.
- An evaluation of the environmental, energy, life cycle cost, and economic advantages and disadvantages of the proposed waste management facilities and programs.
- A description of the time schedule for the development and operation of each proposed facility or program.
- The identity of potential sites within the county where each proposed waste processing, disposal, and recycling program will be located or an explanation of how the sites will be chosen. For any facility outside the county that the county proposes to utilize, the plan shall explain the reasons for selecting such facility.
- The identity of the governmental entity that will be responsible for implementing the plan on behalf of the county and explanation of the legal basis for the entity's authority to do so.

The Waste Planning Act also requires that each county SWMP shall also include a recycling program. Such recycling programs:

- Shall be designed to recycle, by the end of the third and fifth years of the program, respectively 15%, and 25% of the municipal waste generated in the county, subject to the existence of a viable market for the recycled material, based on measurements of recycling and waste generated in terms of weight.

- May provide for the construction and operation of one or more recycling centers by a unit of local government, or for contracting with other public or private entities for the operation of recycling centers.
- Shall include public education and notification programs to foster understanding of and encourage compliance with the recycling program.
- Shall include provisions for compliance, including incentives and penalties.
- Shall include provisions for (i) recycling the collected materials, (ii) identifying potential markets for at least three recyclable materials, and (iii) promoting the use of products made from recovered or recycled materials among businesses, newspapers, and local governments in the county.

### 8.3 DUPAGE COUNTY SOLID WASTE MANAGEMENT PLAN

The DuPage County Board approved its first SWMP in February 1991 (Adopted SWMP). The Adopted SWMP was prepared by the Department of Environmental Concerns, Division of Solid Waste for the DuPage County Solid Waste Planning Committee and consists of the following:

- Volume 1 - Sections 1.0 through 7.0 including existing Solid Waste Management System and Assessment of Needs (Section 2.0), Solid Waste Management Systems (Section 3.0), and Plan of Action (Section 7.0);
- Volume 2 - Appendices A-1 through A-3 entitled Needs Assessment (Appendix A-1), Waste Reduction, Recycling and Landscape Waste Diversion (Appendix A-2), and Materials Recovery by Waste Processing (Appendix A-3);
- Volume 3 - Appendix A-4 entitled Final Waste Processing/Disposal Options, which includes a transfer assessment; and
- Volume 4 - Appendix B consisting of principal legislations including the Solid Waste Management Act and Section 39.2 of the Environmental Protection Act.

Updates to the SWMP were approved by the DuPage County Board in 1996, 2001, 2007, 2012, and 2017 (Updates). Relevant portions of Volumes 1 through 3 of the Adopted SWMP are contained in Appendices 8-A through 8-C, respectively. Volume 4 contains outdated, publicly available information, and is not attached. The 1996 through 2017 Updates are contained in Appendices 8-D through 8-H, respectively. The 1996 Updates consisted of two volumes. Volume II of the 1996 Updates only contains outdated agreements and related information regarding two closed landfills and is not included in Appendix 8-D.

#### 8.3.1 ADOPTED SWMP

The Adopted SWMP provides various information regarding DuPage County's waste generation and disposal needs, and summarizes recommended actions. The following are relevant excerpts:

- DuPage County has a total land area of 332 square miles, thirty-two incorporated cities or villages (twenty-three of which lie wholly within the county), and a population of 658,875 according to the 1980 census, resulting in a population density of approximately 1,985 persons per square mile [Appendix 8-A, Section 2.1, page 2-1].
- The DuPage County Planning Department predicted the population to increase to 922,631 persons by the year 2000, fueled by an expansion in a variety of commercial sector activities ranging from manufacturing to retail and increases in households [Appendix 8-A, Section 2.1, pages 2-1, and 2-4].

- DuPage County is considered to be one of the most affluent counties in the United States, which translates to a higher than average per capita waste generation rate [Appendix 8-A, Section 2.1, page 2-4].
- The principle method of solid waste disposal in DuPage County is landfilling at the Greene Valley and Mallard Lake Landfills [Appendix 8-A, Section 2.1, page 2-12].
- The waste generation is estimated to be 8.0 pounds per capita per day (or 3,125 tons per day) for DuPage County in 1990, and is estimate to increase to 9.3 pounds per capita per day (or 4,580 tons per day) by 2010 [Appendix 8-A, Section 2.1, page 2-18].
- Waste reduction is a pivotal component of DuPage County’s solid waste system including source reduction, waste prevention, and pollution abatement [Appendix 8-A, Section 3.1.1, pages 3-1 through 3-5].
- In order to accomplish waste reduction goals, recycling strategies have been developed [Appendix 8-A, Section 3.1.2, pages 3-6 through 3-5].
- The residential sector has been the central focus of recycling initiatives including drop-off facilities, curbside collection programs, and intermediate processing facilities [Appendix 8-A, Section 3.1.2, pages 3-8 through 3-11].
- The need exists for at least two intermediate processing facilities in the county, preferably a northern and southern facility, where recyclable materials would be collected in quantity, sorted by type, and processed into marketable quantities [Appendix 8-A, Section 3.1.2, page 3-11].
- Construction/demolition waste accounts for nearly 29% of the total DuPage County waste stream. Expansion of recycling activities for these materials is encouraged [Appendix 8-A, Section 3.1.2, pages 3-1 through 3-5].
- Phase I of the proposed solid waste management system provides for reducing, recycling, and otherwise diverting materials, which can be recovered from the total waste stream. Further reduction in the waste stream will be possible by the implementation of a post-consumer mixed waste processing system, which is Phase II of the proposed solid waste management system [Appendix 8-A, Section 3.2.1, page 3-27].
- The general categories of post-collection materials recovery alternatives including dump and pick, mechanically assisted hand separation, and mechanical separation processes [Appendix 8-A, Section 3.2.2, page 3-28].
- Mechanically assisted hand separation systems employ a series of conveyors which carry the waste past workers at picking stations. More advanced mechanical separation processes employ increased levels of automatic materials separation including size reduction/shredding, vibrating screens, and magnetic separation. One of the most common applications of post-collection materials recovery processes is at waste transfer stations [Appendix 8-A, Section 3.2.2, page 3-29 through 3-32].

- Phase III of the proposed solid waste management system consists of final waste processing/disposal options including transfer stations, combustion options, landfills composting, pyrolysis, and bioconversion [Appendix 8-A, Section 3.3, page 3-37 through 3-155].
- The recommended actions include the following regarding recycling of construction/demolition waste:
  - Goals for the reduction of this component of the waste stream should parallel other county recycling goals. The county should encourage steps leading towards a minim reduction in this waste component of 15% in three years and 25% within five years [Appendix 8-A, Section 3.3, page 7-10].
  - The provision of equipment and facilities for construction/demolition waste recycling should be sought first from private developers [Appendix 8-A, Section 3.3, page 7-11].
- The recommended actions for waste transfer include the consideration of the following if it is determined that waste transfer is to be implemented:
  - The availability of in-county disposal capacity should be determined. Even if in-county disposal capability will be available for an extended period of time the practicality and desirability of providing transfer capability in the county should be evaluated as a mechanism to improve waste transport efficiencies and to minimize local traffic impacts [Appendix 8-A, Section 3.3, page 7-17].
  - If waste disposal outside of the county is to be sought, the delivery requirements at outside-county disposal location should be determined. For transfer of waste to out-of-county disposal sites, it is preferable to know the delivery requirements of the specific site prior to construction of the transfer station(s) [Appendix 8-A, Section 3.3, page 7-17].
  - If it is determined that transfer capability should be provided, a transfer station siting analysis should be performed. The analysis would include, at a minimum, the determination of waste generation profiles in the county and provide a site screening process to identify possible sites for the placement of one or multiple transfer station(s) [Appendix 8-A, Section 3.3, page 7-17].

### **8.3.2 1996 UPDATE**

The 1996 Update builds upon the planning and implementation basis provided by the Adopted SWMP. The following are relevant excerpts:

- Waste is estimated to be generated at a rate of 7.17 pounds per capita per day for 1994. The decline in generation rate compared to the generation rate in the Adopted SWMP may be due to a variety of factors [Appendix 8-D, Section 2.3.4, page 17].

- The 1990 census estimates the DuPage County population to be 781,666, an increase of 19% in a ten-year period from 1980 to 1990 [Appendix 8-D, Section 2.1, page 9].
- The landfilling option in DuPage County was greatly limited when a consent decree ordered the two DuPage County landfills (Greene Valley and Mallard Lake Landfills) to close by December 31, 2000. The landfill operators (Waste Management and Brown-Ferris Industries (BFI)) decided to direct significantly more waste to the landfills, which will close the landfills earlier than the ordered closure date [Appendix 8-D, Section 4.7, page 100].
- The recommended actions include the following regarding recycling of construction/demolition waste:
  - Goals for the reduction of this component of the waste stream should parallel other county recycling goals. The county should encourage steps leading towards a minim reduction in this waste component of 25% in three years and 50% within five years. A 1995 waste stream characterization estimated that approximately 34% of all waste generated in DuPage County and deposited in both county landfills was C&D material [Appendix 8-D, Section 4.3, pages 76 and 77].
  - DuPage County will focus on reducing the C&D materials that will be leaving DuPage County for disposal once the two county landfills close [Appendix 8-D, Section 4.3, page 79].
  - DuPage County should reduce disposal of the C&D waste stream by 50% through reuse and recycling by the year 2000 [Appendix 8-D, Section 4.3, page 80].
  - In cooperation with the private sector, DuPage County will promote whenever appropriate, legislation to enhance C&D recycling [Appendix 8-D, Section 4.3, page 80].
  - The provision of equipment and facilities for construction/demolition waste recycling should be sought first from private developers, but thus far, limited interest for recycling C&D materials has come from the private developers [Appendix 8-D, Section 4.3, page 81].
- The recommended actions include the following regarding waste hauling and transfer stations:
  - DuPage County should encourage the development of three to five waste transfer facilities throughout the county. Although no permitted waste transfer stations are currently located within the boundaries of DuPage County, DuPage County recognizes the development of waste transfer facilities are an integral part of the total solid waste management program [Appendix 8-D, Section 4.3, pages 107 and 109].

### **8.3.3 2001 UPDATE**

The 2001 Update provides the second five-year update to the Adopted Plan. The following are relevant excerpts:

- The Illinois Environmental Protection Agency has estimated that Illinoisans generated waste at a rate of 6.9 pounds per capita per day for 1999 [Appendix 8-E, Section 1.0, page 3].
- The 2000 census estimates the DuPage County population to be 904,161 [Appendix 8-E, Section 1.0, page 3].
- The countywide total diversion and recycling rate is currently about 35% for residential waste sources based on reporting data for 2000. Considering the recycling rate of 35%, the county is landfilling 740,000 tons of waste each year [Appendix 8-E, Section 1.0, page 3].
- The DuKane Transfer Facility is the only facility in the county that accepts solid waste for transfer to landfills outside DuPage County. This facility is permitted to accept a maximum of 1,950 tons of waste per day with an annual average amount not to exceed 1,500 tons per day [Appendix 8-E, Section 2.0, page 3].
- It is recommended that the permitted capacity of the DuKane Transfer Facility be increased from 1,500 tons per day to 2,500 tons per day. DuPage County would still have a remaining need for an additional one, or two transfer facilities [Appendix 8-E, Section 2.0, page 4].
- A second and/or third transfer station is expected to increase competition, reduce wear on roads, reduce overall truck miles traveled, and decrease truck air emissions [Appendix 8-E, Section 2.0, page 4].

### **8.3.4 2007 UPDATE**

The 2007 Update reviews the current status of the solid waste management activities within DuPage County and sets the priorities for the next five years. The following are relevant excerpts:

- Waste is estimated to be disposed at a rate of 7.5 pounds per capita per day in 2006 [Appendix 8-F, page 1].
- The 2006 population was estimated to be 932,670, with thirty-nine municipalities wholly or partially in DuPage County. The county is disposing 3,498 tons of waste per day for a total of 1,276,592 tons per year. Considering the recycling rate of 31%, the county is landfilling 893,614 tons of waste each year [Appendix 8-F, pages 2 and 3].
- DuPage County has achieved a residential recycling rate of 37% and a commercial recycling rate of 22%, making the overall recycling rate 31% (which is well above the State

mandated 25%). There is room for improvement in commercial recycling [Appendix 8-F, page 2].

- DuPage County is currently home to one MSW transfer station, one landscape waste transfer station, and three construction/demolition debris recycling facilities. The capacity of the one MSW transfer station (DuKane Transfer Facility) was increased to 3,000 tons per day. The trend in the Chicagoland area has been to utilize transfer stations because viable landfills are closing [Appendix 8-F, page 2].
- DuPage County has no operating landfills, and due to the setback and expansive space requirements, siting a new landfill is nearly impossible [Appendix 8-F, page 3].
- Based on an analysis using an ideal maximum of a 10-mile one-way travel distance, the northwestern portion of the county is being served by one in-county, and three out-of-county transfer stations; the northeastern portion of the county is being, and/or could be, served by three transfer stations; and the only areas that may benefit from a waste transfer station are located in the southern portion of the county. The position at this time is to rely on existing stations both inside and outside the county borders [Appendix 8-F, page 3].
- The summary of 1996 to 2007 accomplishments and recommendations include the following:
  - DuPage County will focus on reducing the C&D materials that will be leaving DuPage County for disposal once the two county landfills close. DuPage County assisted in the development of a C&D recycling guidebook and conducted a pilot program working with general contractors [Appendix 8-F, page 10].
  - DuPage County should reduce disposal of the C&D waste stream by 50% through reuse and recycling by the year 2000. Two recycling facilities are operating, but tracking of C&D recycling is difficult [Appendix 8-F, page 10].
  - In cooperation with the private sector, DuPage County will promote whenever appropriate, legislation to enhance C&D recycling. DuPage County assisted in changing regulations to allow C&D facilities operating in DuPage County to be exempt from IEPA permits [Appendix 8-F, page 10].
  - The provision of equipment and facilities for construction/demolition waste recycling should be sought first from private developers. DuPage County has taken an approach to allow the private sector and the market to drive this economy [Appendix 8-F, page 11].
  - The practicality and desirability of providing transfer capability in the county should be evaluated as a mechanism to improve waste transport efficiencies and to minimize local traffic impacts. Transfer of waste is the preferable method of disposal, and DuPage County recommended siting additional transfer stations in the 2001 Update [Appendix 8-F, page 14].

- DuPage County should encourage the development of three to five waste transfer facilities throughout the county. DuPage County is currently evaluating disposal capacity, and transfer of waste is the preferred method [Appendix 8-F, page 14].

### 8.3.5 2012 UPDATE

The 2012 Update reconsiders the current waste disposal capacity of DuPage County and includes new recycling successes due to the landfill ban placed on electronics, the commercial recycling program, and new food scrap collection and composting programs. The following are relevant excerpts:

- Waste is estimated to be generated at a rate of 9.19 pounds per capita per day based on the rate identified in the 2009 Illinois Commodity/Waste Generation Study for the Chicago Metropolitan Region [Appendix 8-G, page 2].
- The 2010 population was estimated to be 916,924. Assuming a growth rate of 1.4% over the subsequent five years, this plan needs to account for 929,760 residents generating 1,537,842 tons of waste per year [Appendix 8-G, page 2].
- DuPage County has achieved a residential recycling rate of 42% in 2011. Commercial recycling data is unavailable and is much lower. The estimated combined recycling rate is 30% [Appendix 8-G, pages 1 and 3].
- DuPage County is currently home to one MSW transfer station, three landscape waste transfer stations, and two construction/demolition debris recycling facilities. The capacity of the one MSW transfer station (DuKane Transfer Facility) is 3,000 tons per day. The capacity of the construction/demolition debris recycling facilities is not specified [Appendix 8-G, page 3].
- The DuKane Transfer Facility is estimated to receive 50% of its waste from DuPage County (based on previous studies by Shaw Environmental) [Appendix 8-G, page 4].
- The county's Commercial Recycling program is working with DuPage County businesses to launch food waste composting [Appendix 8-G, page 6]
- DuPage County participated in the effort to make it easier to recycle construction and demolition debris [Appendix 8-G, pages 4 and 5].
- Certain electronics products were banned from landfills as of January 1, 2012. The county has been working with governmental partners since 2008 to provide electronics recycling drop-off locations, and promote events and locations [Appendix 8-G, page 5].
- The county has no operating landfills and new landfills are not needed or possible within the county. The preferred method for waste disposal continues to be waste transfer [Appendix 8-G, page 5].

- Maps are provided for permitted landfills and transfer stations in the region. Service areas for transfer stations are shown from siting documents or a 10-mile radius determined to be the maximum economical distance for a waste hauling company [Appendix 8-G, page 5].
- Factors that contribute to the need for new transfer stations are an increasing population, rising waste generation rate, and fuel/operating costs. Future conditions may necessitate a new transfer station in the southern portion of the county [Appendix 8-G, page 5].
- It is potentially foreseeable that the out-of-county facilities may cease servicing all, or parts, of the current DuPage County area. In the event this occurs, there would be a service gap in the affected areas thereby creating a potential need for a new facility [Appendix 8-G, page 5].

### 8.3.6 2017 UPDATE

The 2017 Update evaluates the waste disposal capacity of DuPage County, electronic recycling coverage, and identifies food scrap collection and compost feasibility. The 2017 Update also discusses the accomplishment of several goals. The following are relevant excerpts:

- Waste is estimated to be generated at a rate of 8.7 pounds per capita per day based on the rate identified in the 2015 Illinois Commodity/Waste Generation and Characterization Study update. The estimated MSW generation rate is 4,042 tons per day or 1,475,604 tons per year [Appendix 8-H, page 8].
- The 2010 population was estimated to be 916,924. Current U.S. Census estimates put the population at 929,368 [Appendix 8-H, page 5].
- The DuPage County residential recycling rate was calculated to be 41% in 2011, with commercial recycling much lower. The estimated combined recycling rate is 30% [Appendix 8-H, page 8].
- The Waste Management DuPage County Recycling Center drop-off center in Carol Stream is available to all residents, while the recycling centers in Addison and Naperville are limited to residents within their boundaries [Appendix 8-H, page 9]. The 2017 DuPage County Waste and Recycling Report indicates that the Carol Stream facility closed in 2017.
- Recycling has seen a significant amount of change over the last decade with volatile market values, contamination issues, and shrinking end users. The county recognizes the local challenges of these issues as limiting factors in expanding or increasing programs or the diversion rate [Appendix 8-H, page 17].
- DuPage County is currently home to one MSW transfer station, four landscape waste transfer station, and three construction/demolition debris recycling facilities. The capacity of the one MSW transfer station (DuKane Transfer Facility) is 3,000 tons per day. The capacity of the construction/demolition debris recycling facilities is not specified [Appendix 8-H, page 15].

- Certain electronics products were banned from landfills as of January 1, 2012. The program to work with electronic recyclers has struggled to remain sustainable. In 2016, the county pursued a system using a recycling fee for harder-to-handle items, and relaunched collection sites. The Electronics Products Recycling and Reuse Act was significantly amended in 2017, and mandated a specified number of collection sites in counties based on population density. The changes are effective January 1, 2019, and DuPage County is expected to receive five collection sites [Appendix 8-H, pages 10 and 11].
- Based on waste generation and recycling rates, DuPage County is estimated to need to dispose of approximately 929,431 tons of waste annually. The DuKane Transfer Facility is permitted to accept up to 3,000 tons per operating day so it can move 939,000 tons per year. However, service areas must be considered, as well as the market forces of private sector waste hauling entities. Large regions of the county are not optimally served due to the lengthy transportation routes, which lead to increased costs and air emissions. To address this, DuPage County will consider new or expanded facilities handling, treating, and recycling waste on a case-by-case basis [Appendix 8-H, page 16].

## 8.4 SUMMARY

DuPage County has a long history of encouraging and working towards a solid waste management system that provides for recycling and otherwise diverting materials, which can be recovered from the total waste stream. Recycling efforts have included C&D, and DuPage County was active in the legislation that made it easier to permit C&D recycling facilities. The West DuPage RTS is an existing C&D recycling facility whose development was facilitated by the above legislative efforts.

DuPage County recognizes the benefits of proven materials recovery techniques to enhance recycling such as dump and pick, mechanically assisted hand separation, and mechanical separation processes. The current operations at the West DuPage RTS utilize each of these techniques to recycle C&D debris, and the proposed West DuPage RTS would facilitate an increase in the amount of C&D recycling.

Electronics products were banned from landfills as of January 1, 2012, and DuPage County is in need of drop-off locations. The West DuPage RTS would serve as a drop-off location for electronic wastes.

DuPage County has relied on transfer stations to transport non-recyclable waste and MSW to out-of-county landfills. More than half of DuPage County's waste is handled by out-of-county transfer stations. DuPage County has evaluated the need for additional transfer stations over time, and most recently stated that new or expanded facilities for handling, treating, and recycling waste would be considered on a case-by-case basis. The West DuPage RTS would enhance the capability and capacity of DuPage County to handle, treat, and recycle waste.

Attachment 8-I contains an April 23, 2020 letter from Joy Hinz of DuPage County (DuPage County Letter), who is responsible for overseeing the SWMP. The DuPage County Letter indicates that the 2017 Update:

- Finds that service areas of existing facilities be considered as well as market forces;
- Observes that the county lacks disposal capacity for the waste generated within its borders; and
- Observes that additional pollution control facilities may be needed but will be considered on a case-by-case basis.

The DuPage County Letter concludes that the proposed West DuPage RTS appears to be consistent with the 2017 Update.

## 8.5 CONCLUSION

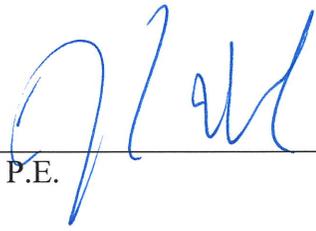
Consistency requires that West DuPage RTS be in accordance with the SWMP. This report has demonstrated that West DuPage RTS is consistent with the SWMP and all provisions in effect at the time of the submittal of this Application. The following factors support this conclusion:

- The SWMP encourages recycling of C&D. The site currently is recycling C&D and the proposed West DuPage RTS would increase the amount of C&D that is recycled.
- The SWMP recognizes the current challenges of implementing recycling programs for SSR, and the West DuPage RTS would provide a facility for the economic transfer of SSR to a MRF(s) and serve as a drop-off location for residents.
- The SWMP states that additional drop-off locations for electronics waste are needed, and the West DuPage RTS would serve as a drop-off location for electronic wastes.
- The SWMP indicates that DuPage County has relied on transfer stations to transport non-recyclable waste and MSW to out-of-county landfills; at least half of DuPage County's waste is handled by out-of-county transfer stations; and new or expanded facilities for handling, treating, and recycling waste would be considered on a case-by-case basis. The West DuPage RTS would enhance the capability and capacity of DuPage County to handle, treat, and recycle a variety of wastes.
- The DuPage County Letter concludes that the proposed West DuPage RTS appears to be consistent with the 2017 Update.

For the reasons cited above, West DuPage RTS meets the requirements of Criterion 8, as it is consistent with the DuPage County SWMP now in effect.

## 8.6 CERTIFICATION

I hereby certify that all information contained in this Application for Local Siting Approval for Criterion 8 was prepared by me or under my direct supervision, and is true and correct to the best of my knowledge and belief.

  
\_\_\_\_\_  
John Hock, P.E.

9-14-2022  
\_\_\_\_\_  
Date

062-047623 - IL

\_\_\_\_\_  
Professional Engineer Registration Number and State



---

**APPENDIX 8-A**

**DUPAGE COUNTY SWMP  
VOLUME 1**

---

*February, 1991*

# DuPage County

## *Solid Waste Management Plan*

*Volume 1 of 4*

Prepared For:  
DuPage County Solid Waste  
Planning Committee

Prepared By:  
Department of Environmental Concerns  
Division of Solid Waste



DuPAGE  
COUNTY  
RECYCLING  
PROGRAM

**DUPAGE COUNTY**  
**SOLID WASTE MANAGEMENT PLAN**

**- 1990 -**

Prepared By The Solid Waste Division Of  
The DuPage County Department Of Environmental Concerns

February, 1991

**THIS DOCUMENT IS PRINTED ON RECYCLED PAPER**

**DUPAGE SOLID WASTE PLANNING/  
REDUCTION COMMITTEE (Approving Committee)**

=====  
County Board Members

Wallace H. Brown (Dist. 3)  
Chairman

Robert W. Schroeder (Dist. 5)  
Vice Chairman

Michael Formento (Dist. 4)

Judith C. Ross (Dist. 2)

Ray Soden (Dist. 1)

=====  
Municipal Members

Sonya Crawshaw (Dist. 1)

Gwendolyn Henry (Dist. 4)

Walter Imrie (Dist. 2)

Vivian Lund (Dist. 5)

Ann Schenck (Dist. 3)

**DUPAGE SOLID WASTE  
PLANNING COMMITTEE (Drafting Committee)**

=====  
County Board Members

Lloyd Renfro - Chairman (Dist. 4)

Irene Stone - Vice Chairman (Dist. 2)

John Case (Dist. 5)

Floyd Sanford (Dist. 1)

Patricia Trowbridge (Dist. 3)

=====  
Municipal Members

Sonya Crawshaw (Dist. 1)

Gwendolyn Henry (Dist. 4)

Walter Imrie (Dist. 2)

Vivian Lund (Dist. 5)

Ann Schenck (Dist. 3)

**DUPAGE SOLID WASTE  
CITIZENS' ADVISORY COMMITTEE**

=====  
Robert Heap (Dist. 5)  
Chairman

=====  
Bill Sheppard (Dist. 3)  
Co-Chairman

David Doolittle (Dist. 1)

Catherine Melchert (Dist. 1)

Dr. Gary Brenniman (Dist. 2)

Sandra Keehn (Dist. 2)

Joe LaSpina (Dist. 3)

Robert M. Johnson (Dist. 4)

Stephen Blecharczyk (Dist. 4)

Joni Mimnaugh (Dist. 5)

Bob Piet - Browning-Ferris Industries, Inc.

Mary Ryan - Waste Management of Illinois, Inc.

DuPage County Department of Environmental Concerns  
421 N. County Farm Road  
Wheaton, Illinois 60187

Gregory W. Wilcox - Director

Staff Assigned To Preparation:

Steven Dunn - Solid Waste Administrator  
Eric Keeley - Recycling Coordinator  
Rodd Elges - Engineering Technician  
Keith Trychta - Engineering Technician  
Amanda Rutter - Administrative Intern

Portions of this document were prepared with the assistance of  
Camp, Dresser and McKee, Inc. - Chicago, Illinois

Special thanks are extended to Ms. Jean Wojtasiak for her extensive  
efforts in preparation of this document and to Ms. Darlene Lynch  
for her coordination of and support to the Citizens' Advisory  
Committee.

**DUPAGE COUNTY SOLID  
WASTE MANAGEMENT PLAN  
- 1990 -**

1.0 INTRODUCTION, BACKGROUND AND PURPOSE.....1-1

PURPOSE.....1-1

1.1 Introduction.....1-1

1.2 Organization.....1-2

1.3 Requirements For Solid Waste Plan.....1-2

1.3.1 Legislative Requirements.....1-2

1.3.2 Assigned Committees.....1-4

1.3.3 Authorities And Responsibilities.....1-5

1.4 Previous Solid Waste Planning Efforts.....1-7

1.4.1 Introduction.....1-7

1.4.2 Alternative Refuse Disposal Systems -  
Resource Recovery - Phase I,  
February 1986.....1-8

1.4.3 DuPage County Solid Waste  
Recycling Study, November 1987.....1-8

1.4.4 DuPage County Solid Waste, Waste-  
To-Energy Study, December 1987.....1-9

1.4.5 DuPage County Landfill/Ashfill  
Feasibility Study, January 1988.....1-10

1.4.6 DuPage County Solid Waste  
Management Summary Feasibility  
Report, January 1988.....1-11

1.4.7 DuPage County Solid Waste Management  
Landscape Waste Feasibility Report,  
August 1989.....1-13

1.4.8 DuPage County Solid Waste Recycling  
Plan - Phase I - Residential,  
November 1988.....1-14

1.4.9 DuPage County Solid Waste Management Plan,  
September 1988.....1-15

1.5 Status Of Previous Solid Waste Planning Efforts....1-17

1.6 Objectives And Conditions Of The Planning Effort...1-18

2.0	EXISTING SOLID WASTE MANAGEMENT SYSTEM AND ASSESSMENT OF NEEDS.....	2-1
2.1	Planning Area (DuPage County) Location And Demographics.....	2-1
2.2	Existing Waste Collection, Disposal And Management System.....	2-5
2.2.1	State of Illinois And Northeast Illinois.....	2-5
2.2.2	DuPage County.....	2-12
2.3	Current And Projected Waste Generation Quantities.....	2-16
2.4	Characterization Of Waste.....	2-19
2.5	Existing Disposal Capabilities.....	2-19
3.0	SOLID WASTE MANAGEMENT SYSTEMS.....	3-1
3.1	Phase I - Waste Reduction, Recycling And Waste Diversion.....	3-1
3.1.1	Waste Reduction.....	3-1
3.1.2	Recycling.....	3-6
3.1.2.1	Residential Sector.....	3-7
3.1.2.2	Commercial/Industrial/Institutional Sector.....	3-12
3.1.2.3	Public Sector.....	3-14
3.1.2.4	Construction/Demolition Waste.....	3-15
3.1.2.5	Dirt/Clay/Wastewater Sludge.....	3-16
3.1.3	Landscape Waste.....	3-16
3.1.3.1	Separate Collection.....	3-18
3.1.3.2	Disposal Facilities.....	3-20
3.1.3.3	Education And Information Programs.....	3-22
3.1.4	Funding.....	3-24
3.1.4.1	Capital Costs.....	3-24
3.1.4.2	Operational Costs.....	3-25
3.1.4.3	Revenues.....	3-25
3.1.5	Findings.....	3-26

3.2	Phase II - Materials Recovery By Waste Processing.....	3-27
3.2.1	Processing Objectives.....	3-27
3.2.2	Materials Recovery Alternatives.....	3-28
3.2.2.1	Dump And Pick.....	3-28
3.2.2.2	Mechanically-Assisted Hand Separation....	3-29
3.2.2.3	Mechanical Processes.....	3-29
3.2.3	System Applications.....	3-32
3.2.4	Environmental And Siting Considerations..	3-34
3.2.5	Costs.....	3-35
3.2.6	Findings.....	3-36
3.3	Final Waste Processing/Disposal Options.....	3-37
3.3.1	Waste Transfer Options.....	3-38
3.3.1.1	Waste Transfer Objectives.....	3-38
3.3.1.2	Overview Of Systems.....	3-38
3.3.1.3	Environmental And Siting Considerations..	3-42
3.3.1.4	Costs.....	3-47
3.3.2	Combustion Options.....	3-49
3.3.2.1	Overview Of Systems.....	3-49
3.3.2.2	Environmental And Siting Considerations..	3-62
3.3.2.3	Costs.....	3-93
3.3.3	Landfill Options.....	3-96
3.3.3.1	Overview Of Design And Operating Components.....	3-100
3.3.3.2	Environmental And Siting Considerations.....	3-118
3.3.3.3	Costs.....	3-132
3.3.3.4	Considerations For Continued Use Of Existing Sites.....	3-134
3.3.4	Other Disposal Options.....	3-141
3.3.4.1	Out-Of-County/Private Project Options...	3-142
3.3.4.2	Other Processing And Disposal Options...	3-146
3.3.5	Findings For Phase III Solid Waste Management Options.....	3-155
4.0	EDUCATION AND INFORMATION SYSTEM.....	4-1
4.1	Goals And Objectives.....	4-1

4.2	System Elements.....	4-2
4.3	Recommendations.....	4-4
5.0	DEFINITION OF PROPOSED SOLID WASTE MANAGEMENT SYSTEM.....	5-1
6.0	IMPLEMENTATION ISSUES.....	6-1
6.1	Process For Plan Review And Approval.....	6-1
6.2	Solid Waste Plan Implementation And Administration.....	6-3
6.3	Funding.....	6-3
6.4	Amendments To Plan.....	6-6
6.5	Waste Flow Control As An Implementation Issue.....	6-7
7.0	PLAN OF ACTION.....	7-1
7.1	Recommendations For Major Elements.....	7-1
7.1.1	Phase I - Waste Reduction, Recycling And Waste Diversion.....	7-1
7.1.2	Phase II - Materials Recovery By Waste Processing.....	7-14
7.1.3	Phase III - Final Waste Processing And Disposal.....	7-16
7.1.4	Administrative.....	7-21
7.2	Implementation Timeframes And Considerations.....	7-23

## APPENDICES

### APPENDIX A - ASSESSMENT DOCUMENTS

- A-1 Needs Assessment
- A-2 Waste Reduction, Recycling and Landscape Waste Diversion  
(Phase I - Waste Management)
- A-3 Materials Recovery By Waste Processing  
(Phase II - Waste Management)
- A-4 Final Waste Processing/Disposal Options  
(Phase III - Waste Management)
  - Transfer Assessment
  - Combustion Assessment
  - Landfilling Assessment
  - Other Technologies Assessment

### APPENDIX B - PRINCIPAL LEGISLATION

- Public Act 84-963: "The Local Solid Waste Disposal Act"
- Public Act 84-1319: "The Solid Waste Management Act"
- Public Act 85-14: "An Act In Relation To Local Government  
And Finance"
- Public Act 85-1198: "Solid Waste Planning And Recycling Act"
- Illinois Revised Statutes, Chapter 111 1/2:  
"The Environmental Protection Act", Section 39.2

## SUPPLEMENTAL REPORTS

1. Alternative Refuse Disposal Systems - Resource Recovery Study - Phase I, February 1986
2. DuPage County Solid Waste Recycling Study, November 1987
3. DuPage County Solid Waste-To-Energy Study, December 1987
4. DuPage County Landfill/Ashfill Feasibility Study, January 1988
5. DuPage County Solid Waste Management Summary Feasibility Report, January 1988
6. DuPage County Solid Waste Management Landscape Waste Feasibility Report, August 1989
7. DuPage County Solid Waste Recycling Plan - Phase I - Residential, November 1988
8. DuPage County Solid Waste Recycling Plan - Phase I - Residential, Public Comment/County Response, January 12, 1990
9. DuPage County Solid Waste Plan, September 1988

## GLOSSARY OF TERMS

The terms and definitions which appear in this glossary are designed to assist the interested reader in reviewing all or part of this solid waste management plan. The definitions are not legal definitions.

### **air pollution control equipment**

any equipment or facility of a type intended to eliminate, prevent, reduce or control the emission of specified air contaminants to the atmosphere.

### **ambient air quality**

the standards set by the USEPA to establish the maximum ground level concentration of designated pollutants in the atmosphere in the vicinity of a given area, such as the air in and around DuPage County.

### **ash residue**

the noncombustible material that remains after solid waste has been burned; refers to bottom ash from the combustion grates, fly ash collected in the boiler or by the air pollution control equipment, and reagent from the acid gas removal equipment collected in the air pollution control equipment.

### **attainment area**

any geographic area of the United States that is considered to have air quality as good as or better than the National Ambient Air Quality Standards as defined in the Clean Air Act; an area may be an attainment area for one pollutant and a nonattainment area for others.

### **baghouse**

also referred to as a "fabric filter." A type of pollution control equipment which uses a fabric filtration system (similar to a vacuum cleaner) to collect particles (such as fly ash) in the flue gas of an incinerator by passing the gas through a device containing tubular fabric filter media (bags).

### **Best Available Control Technology (BACT)**

an emission limitation or pollution control system designed to achieve the maximum degree of pollutant reduction which the IEPA determines is achievable through the application of production processes or available methods, systems and techniques, taking into account energy, environmental and economic impacts.

### **bottom ash**

the ash residue which is discharged and collected from the grates of an incinerator following combustion of solid waste or other solid fuels.

### **capacity**

see "disposal capacity"

**collection**

the process whereby solid waste, recyclable materials and yard waste are picked up at the point of generation. collection of these materials often occurs at the curb or backdoor for residential waste and from dumpsters and compactors for commercial and industrial waste.

**commercial waste**

solid waste generated at stores, restaurants, institutions, office buildings, banks, gas stations, recreational facilities and other similar wholesale, retail and service establishments.

**commingled system**

a system for recycling where the paper fraction is separated from the non-paper fraction but all non-paper components are commingled on the collection vehicle and separated later.

**composting**

the biological process by which microorganisms decompose the organic fraction of waste, producing a humus-like material for use as a soil conditioner or for other, similar applications.

**construction and demolition waste**

waste generated as a result of construction and demolition activities, consisting of concrete, brick, stone, cement and other materials which do not decompose or produce a foul odor during decomposition.

**conversion rates**

rates used to convert between tons and cubic yards of solid waste. The following conversion rates have been used in the Plan:

- (i) one ton consumes 2.08 cubic yards of landfill space, including cover dirt
- (ii) one ton occupies 1.66 cubic yards of landfill space, excluding cover dirt
- (iii) one cubic yard of solid waste received at the landfill gate consumes 0.63 cubic yards of landfill space after compaction, including cover dirt
- (iv) one cubic yard of solid waste received at the landfill gate occupies 0.50 cubic yards of landfill space after compaction, excluding cover dirt
- (v) one cubic yard of municipal solid waste in a packer truck weighs 800 pounds on average.

**County**

DuPage County, Illinois.

**cubic yard**

a common measurement of solid waste volume equal to 27 cubic feet. The weight of a cubic yard of solid waste varies widely, depending upon the composition of the waste and the extent to which it has been compacted. One cubic yard of residential waste at the curb may weigh between 100 and 200 pounds; one cubic yard of solid waste in a garbage truck may weigh 600 to 800 pounds; one cubic yard of waste in a landfill may

weigh approximately 1200 pounds. (For additional discussion on yards and tons, see "conversion rates.")

**curbside collection of recyclables**

the process whereby citizens are requested to separate recyclable materials from regular refuse and place the recyclables at the curb for collection by municipal or private collection vehicles. Also referred to as "source separated" in the Plan.

**curbside (or truckside) sort**

a collection approach for recycling where materials are separated (processed) during the collection process by the truckdriver.

**CY**

abbreviation for cubic yards.

**disposal capacity**

the amount of waste which a disposal facility, such as an incinerator or landfill, is designed to accept over a given period of time; usually expressed as tons or cubic yards of daily capacity, annual capacity or total capacity.

**electrostatic precipitator (ESP)**

a type of pollution control equipment which collects particulate matter from the air or gas leaving an incinerator by placing an electrical charge on the particles and attracting them to a metal electrode which is oppositely charged.

**emissions**

materials which may be released to the air, surface water, groundwater or land as a by-product of solid waste management and disposal activities, some of which are potentially harmful if not properly controlled or if emitted in excessive quantities. Systems described in the Plan are designed to minimize the release of potentially harmful emissions into the environment.

**energy markets**

users of the heat, steam or electrical energy which is collected from the process of incineration of solid waste. Examples of energy markets include industries which require steam in their manufacturing processes and electric utilities.

**fabric filter**

see "baghouse."

**flow control**

actions taken by the County to require that waste generated within its jurisdiction is delivered to specified disposal, processing or recycling facilities developed in accordance with the Plan.

**fly ash**

the very small particles of ash entrained in flue gases created by the

combustion of solid waste or other fuel and collected in the boiler or air pollution control equipment.

**hauling**

the process whereby solid waste, recyclable materials and yard waste are transported from the point of generation to an intermediate processing site or final market or disposal site.

**hazardous waste**

as defined by the Illinois Environmental Protection Act, Section 3.15: "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 (Illinois Pollution Control) Board regulations."

**hierarchy**

see "waste management hierarchy."

**household hazardous materials**

household items that have hazardous or toxic constituents, such as furniture polish, car wax, cleaners, paint thinners, solvents, oils, pesticides, and fertilizers.

**IDENR**

the Illinois Department Of Energy And Natural Resources.

**IEPA**

the Illinois Environmental Protection Agency.

**incineration**

the controlled burning of solid waste in a properly engineered furnace equipped with pollution control equipment and operated in accordance with all applicable environmental regulation.

**industrial waste**

solid waste generated at manufacturing or industrial process facilities.

**institutional waste**

solid waste generated at governmental facilities and quasi-governmental facilities such as schools, colleges and hospitals. This waste is included in the commercial and industrial waste quantity estimates contained in the Plan.

**integrated system**

a solid waste management and disposal system composed of interrelated

programs for volume reduction, including volume reduction at the source, recycling, composting, incineration with energy recovery, and a program for landfilling the remaining waste.

**Intermediate Processing Facility**

a facility constructed to separate, densify and load for transport those source-separated recycled materials collected by curbside programs.

**landfill (also sanitary landfill)**

a land disposal site which is permitted by the IEPA for disposal of waste without creating nuisances or hazards to public health or safety. At such sites the solid waste is spread in layers, compacted to the smallest practical volume, and covered with material, usually soil, at the end of each operating day.

**landfill surcharges**

fees collected by the State of Illinois for each ton or cubic yard of solid waste disposed of in landfills in the state. The term "landfill charges" also refers to fees collected by the County of DuPage for each ton or cubic yard of solid waste disposed of in landfills within the county. The fees are for use in enforcement programs, solid waste planning, and other functions as designated by the state and County.

**landscape waste**

leaves, grass clippings, brush cuttings, tree trimmings and other organic wastes generated from the care of yards and lawns.

**leachate**

a liquid that results from water moving through solid waste in a landfill, yard waste compost pile, or other storage or disposal site where waste is exposed to rain or another water source.

**mass burn**

the incineration process whereby unrecycled solid waste is burned to recover energy with little or no preprocessing of the waste prior to combustion.

**material markets**

end users of recovered (recycled) materials that process the recovered materials into new products; examples of material markets include tissue and paper mills, detinning plants, glass container manufacturing plants, and nurseries.

**materials recovery**

the act of processing waste into its individual components in order to recover recyclable materials; remove undesirable components; improve the quality of feedstock wastes for subsequent processes; and reduce the amount of material to be further processed, transported and disposed.

**materials recovery facility**

a facility constructed to process waste into individual components for materials recovery.

**monofill (or ashfill)**

a landfill which accepts only one type of waste usually ash. The Plan recommends a monofill for disposal of the nonrecycled or reused ash residue from the incinerator.

**multi-material recycling center (MMRC)**

a dropoff recycling facility serving more than one material.

**municipal waste**

a term which generally refers to residential, institutional and commercial waste. It usually does not include industrial waste and construction/demolition waste.

**nonhazardous waste**

solid waste which does not fall under the definition of hazardous waste.

**O & M costs**

operation and maintenance costs associated with the operation of solid waste management and disposal facilities.

**permitting**

the process of obtaining federal, state and local permits for the location, development, construction and operation of solid waste management and disposal facilities.

**Plan**

the DuPage County Solid Waste Management Plan.

**Prevention of Significant Deterioration (PSD)**

the USEPA permit program, administered by the IEPA, that analyzes the impacts of air emissions from new or modified sources of emissions, such as an incinerator, in places where the existing air quality is better than required by ambient air quality standards. This process also verifies that the Best Available Control Technology is being used to control pollutants emitted in significant amounts.

**problematic materials**

solid wastes which may pose special handling and disposal problems, including tires, household hazardous materials, used motor oil, and batteries.

**procurement**

the process of selecting and contracting with consultants and vendors specialized in particular aspects of solid waste planning, management, program implementation, and disposal services.

**putrescible waste**

wastes which are liable to decay or decompose and produce rotten or foul odors. Residential, commercial and industrial waste generally fall within this category.

**RCRA**

the Resource Conservation and Recovery Act, passed by the U.S. Congress in 1976 and designed to regulate solid and hazardous waste disposal. It is periodically amended, including a major revision in 1984.

**recyclable materials**

materials which have a useful second life in the economic cycle if they are successfully collected, separated, processed and marketed for return to the economic mainstream; examples include newspaper, aluminum, tin cans, glass containers, yard waste compost, and plastics.

**Recycling Act**

the Illinois Solid Waste Planning and Recycling Act (PA85-1198, sometimes referred to as SB 1616).

**recycling**

the process by which materials that would otherwise become waste, including but not limited to metals, glass, paper, leaves, yard wastes, and plastics, are collected, separated and processed, and returned to the economic mainstream in the form of reusable materials or new products. (Refer to October 5, 1989 IEPA guidance at end of definitions section for additional information)

**refuse-derived fuel (RDF)**

the fuel that is produced when solid waste is processed before combustion in order to reduce the size and quantity of inert materials and prepare a more homogeneous fuel source.

**regional pollution control facilities**

a solid waste storage, transfer, treatment, incineration or disposal facility that accepts waste from more than one unit of local government (see the Illinois Environmental Protection Act for a more detailed definition).

**releases**

see "emissions."

**residential waste**

solid waste generated by individual citizens or from household activities.

**resource recovery**

a term often used to describe the recovery of recyclable materials or energy from municipal waste. Although historically used in reference to waste-to-energy facilities, the term is now more broadly used to indicate various recovery practices prior to landfilling.

**SB-172 siting process**

the local site review and approval hearing process required by Illinois law (PA82-682) for all regional pollution control facilities.

**secondary materials**

an alternative term for recovered or recyclable materials.

**siting**

the process of identifying, evaluating and selecting locations for solid waste management and disposal facilities.

**solid waste management system**

a group of interrelated facilities and programs designed to reduce waste generation and to process, manage and dispose of all solid waste generated within a particular area.

**solid waste management plan**

a document or set of documents which (i) identify the solid waste problem for a particular area; (ii) present data concerning the dimensions of the problem; (iii) identify programs, facilities, standards, and other goals and objectives to remedy the problem; and (iv) develop a schedule and method for implementing the programs and facilities as well as for achieving the goals and objectives.

**solid waste**

nonhazardous solid or semi-solid materials which result from residential, institutional, commercial, office, industrial, construction and demolition activities and which are discarded as garbage, refuse or other waste.

**special waste**

defined by the Illinois Environmental Protection Act as "any industrial process waste, pollution control waste or hazardous waste" (see the Illinois Environmental Protection Act for further definition).

**tipping fee**

the fee charged to deposit waste materials at a transfer station, incinerator, landfill or other disposal site. This fee is usually expressed in terms of dollars per ton of waste material or dollars per cubic yard of waste material.

**transfer station (waste)**

a facility where waste is transferred from several smaller collection vehicles, such as residential garbage trucks, to a larger-volume truck or other shipping container designed to haul the waste to final disposal sites. Does not include facilities which receive source separated recyclables for processing and shipping.

**USEPA**

the United States Environmental Protection Agency.

**volume reduction at the source**

the reduction of waste volumes at the point of generation, accomplished by changes in packaging, consumer purchasing habits, and industrial processes; by public education; and by changes or modifications in other waste generating activities.

**waste management hierarchy**

the order of priority for consideration of solid waste management options designated in the Illinois Administrative Code Chapter II, Section 870.204. In order of preference, the options are (i) volume reduction at the source; (ii) recycling and reuse; (iii) combustion with energy recovery; (iv) combustion for volume reduction; and (v) disposal in landfills.

**waste generation rate**

an estimate of the average amount of solid waste which is generated by each person in DuPage County; measured as pounds of solid waste per capita per day (pcd).

**wastestream**

an alternative term for solid waste which emphasizes the concept of waste "flowing" from generators, such as homes or businesses, to management or disposal sites.

**waste generation**

actions or activities on the part of individuals, businesses, institutions and governments which create solid waste materials that require management or disposal.

**waste reduction**

a program of facility which reduces the volume of waste to be landfilled; examples include volume reduction at the source, recycling, composting and incineration.

**waste-to-energy**

the recovery and use of energy, in the form of heat, steam, or electrical energy, derived during the incineration of solid waste.

planc

RECEIVED

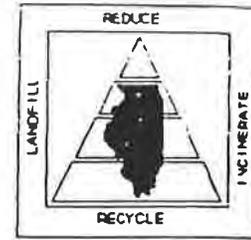
- Copy E. Keeley  
- File: Legislation/  
Enacted

OCT 18 1989

DEPT. OF  
ENVIRONMENTAL  
CONCERNS



ILLINOIS  
ENVIRONMENTAL  
PROTECTION  
AGENCY



## MEMO

DATE: October 5, 1989  
TO: Interested Parties  
FROM: IEPA Division of Land Pollution Control  
SUBJECT: Recycling Rate Calculation for Solid Waste Planning

The Agency has received many questions from planners, consultants planning grant applicants and others concerning how to interpret several items in recycling rate determination and planning required in the Solid Waste Planning and Recycling Act. The definitions of "recycling" and "municipal waste" are not always clear and are even inconsistent with definitions of the same terms in other statutes. It is clear that the Agency should provide its interpretation of the applicability of the Act's definitions as it applies to several points.

Rather than attempt to re-define municipal waste and recycling that are already defined in the statute this policy will focus on specific points where an interpretation is needed. Remember, these interpretations do not define "municipal waste" and "recycling"; the statute does that. This policy simply addresses the Agency's interpretation of a number of questions. An activity or material that is not included in the interpretations below should simply be compared to the statutory definitions. The policy should be amended as new issues are identified. For reference, the definitions of "Municipal waste" and "Recycling" in the Solid Waste Planning and Recycling Act are included below:

"Municipal waste" means any garbage, refuse, industrial lunchroom or office waste, and other material resulting from operation of residential, municipal, commercial or institutional establishments and from community activities.

"Recycling" means any process by which materials that would otherwise become municipal waste, including but not limited to metals, glass, paper, leaves, and plastics, are collected, separated or processed and returned to the economic mainstream in the form of raw materials or products.

AGENCY INTERPRETATION AND POLICY ON CERTAIN QUESTIONS:

Municipal waste does include:

- a) abandoned or discarded household or commercial appliances such as stoves, refrigerators, washing machines and the like.
- b) special wastes generated from municipal, commercial or institutional establishments such as POTW sludge, waste oil from service stations and the like.
- c) abandoned or waste parts from motor vehicles normally removed as a part of regular maintenance such as tires and batteries.
- d) construction and demolition debris from buildings and roads.
- e) wastes collected in a household hazardous waste collection.
- f) landscape waste.

Municipal waste does not include:

- a) abandoned or "junk" motor vehicles.
- b) special waste generated through an industrial operation or process.
- c) hazardous waste.
- d) earth materials moved or removed during demolition or construction.
- e) scrap metal from industrial operations such as machining, lathe work, tool and die operations and the like.
- f) municipal waste used as clean fill, road base material or other uses constituting disposal.

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) shredding operations where the waste is returned to the economic mainstream or replaces other raw materials as soil conditioner, mulch or erosion control.
- c) re-using construction or demolition debris for building construction purposes or re-use as road surface materials.
- d) using waste for commercial feed such as mink farms, swine operations or fish production.
- e) processing waste at a rendering facility for return to the economic mainstream.
- f) processing municipal waste, particularly metal appliances, for metal recovery.
- g) applying landscape or other municipal waste directly to agricultural land at agronomic rates.

Municipal waste recycling rate is calculated: as the percentage derived by dividing the weight of the municipal waste generated within the area of concern being recycled (or planned for recycling) over a year 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.

**SECTION 1.0**  
**INTRODUCTION, BACKGROUND AND PURPOSE**

**- PURPOSE -**

The purpose of this document is to provide options for long-term solid waste disposal first in an environmentally sound and, second, in a cost-effective manner for the residents of DuPage County. This document has been prepared in order to provide decision makers with a guidance document for future actions as well as to meet a State of Illinois mandate for the preparation of a solid waste plan.

1.1 INTRODUCTION

In 1988 the Illinois Legislature passed Public Act 85-0990 which requires counties having a population of 100,000 or more to prepare, consider and adopt solid waste plans for submittal to the Illinois Environmental Protection Agency (IEPA) by March 1, 1991. This document has been prepared in order to satisfy the State mandate and provides a waste management plan for the long-term management of municipal solid waste generated in the DuPage County planning area. This document entitled "DuPage County Solid Waste Management Plan, 1990" will be referred to as "Plan-1990" throughout the document.

Plan-1990 presents information describing current waste generation and disposal practices in the planning area as well as projections for future waste generation and disposal capabilities. This information is used to identify solid waste management needs in the planning area. After definition of solid waste management needs, Plan-1990 presents and evaluates various options available to satisfy apparent needs in the future.

## 1.2 ORGANIZATION

Plan-1990 consists of two principal divisions. The first division (this volume) provides the base reporting and recommendation document for the solid waste planning effort. The second division consists of technical appendices which provide the detailed analyses and information used in Plan-1990. The appendices are listed as follows:

- A-1 Needs Assessment
- A-2 Waste Reduction, Recycling And Landscape Waste Diversion (Phase I Waste Management)
- A-3 Materials Recovery By Waste Processing (Phase II Waste Management)
- A-4 Final Waste Processing/Disposal Options (Phase III Waste Management)
  - Combustion Technology Assessment
  - Landfilling Technology Assessment
  - Transfer Technology Assessment
  - Other Technologies Assessment

In addition to the appendices listed above, Plan-1990 is supported by the waste planning documents which have been previously developed by the County. These planning documents are listed and summarized in Section 1.4.

## 1.3 REQUIREMENTS FOR SOLID WASTE PLAN

### 1.3.1 Legislative Requirements

Public Act 85-0990 requires the County to develop, consider and adopt a solid waste plan by March 1, 1991. The plan is to be submitted to the IEPA for its review within ten days of adoption. Further, the County is required to implement the plan within one year of adoption.

The solid waste plan must conform to the requirements for contents as provided in the Act, a copy of which is included in Appendix B. However, major requirements of the Act for content of the plan may be summarized as follows:

- It must contain an assessment of the generation of waste in the planning area at the current time and an assessment of the amount of waste to be generated during a 20 year planning period.
- It must describe the current disposal facilities available in the planning area and assess the remaining capacity.
- It must describe the facilities and programs proposed for the management of waste throughout the 20 year planning period and in this description must evaluate the facility in terms of environmental, energy and cost factors.
- It must provide a time schedule for the implementation of the plan.
- It must identify potential sites for waste management facilities proposed in the county or a method by which such sites will be chosen. Further, for sites chosen which are located outside of the county, the plan shall describe the reasons for selecting the facility.
- It must identify the governmental entity responsible for implementing the plan.
- It must be updated at 5 year intervals after its formal adoption by the county.
- It must conform with the State Of Illinois' hierarchy for the management of municipal solid waste.
- It must contain a recycling program which shall be implemented throughout the county and be designed to recycle, by the end of the third and fifth years respectively, 15% and 25% of the municipal waste generated within the county.

The Act also requires that the plan be afforded the opportunity for public comment and input during the preparation and consideration process. It requires the formation of a "citizens' advisory committee" to participate in the preparation and review of the plan. It also requires that the plan be subjected to formal

public comment by a defined process prior to its adoption by the county.

Finally, the Act allows for a civil penalty of \$5,000 for violation of any provision of the Act.

### 1.3.2 Assigned Committees

Solid waste activities at the County have been directed by two committees of the County Board for the period from 1988 through 1990. They were the DuPage Solid Waste Planning Committee (Waste Planning Committee) and the DuPage County Wastestream Reduction Committee (Wastestream Reduction Committee). The Waste Planning Committee had the principal responsibility of planning for the management of waste while the Wastestream Reduction Committee evaluated options to reduce the amount of waste requiring management, processing and disposal. Beginning in 1991, these two committees will be combined into a single committee.

The DuPage County Solid Waste Planning Committee was formed in 1982 to evaluate and recommend activities necessary to insure long-term solid waste disposal capability for DuPage County residents. Several issues during the early 1980's spurred the committee to conclude that it should carefully examine solid waste issues. For this subject, it was clear to the Committee that comprehensive long-range planning was required.

Until 1986 the Committee was a standing committee of the DuPage County Board and was comprised only of County Board members. In 1986 representatives from the DuPage Mayors And Managers Conference were seated on the Committee in order to provide local government representation. In 1987 the DuPage Solid Waste Planning Committee was formed in accordance with the newly enacted Public Act 85-14, the text of which was developed through discussions between county representatives and members of the DuPage Mayors And

Managers Conference regarding possible methods to provide coordinated solid waste planning and implementation authority. For further information on this formation, the reader is directed to the DuPage County Solid Waste Management Summary Feasibility Report, January, 1988. The Waste Planning Committee is currently comprised of equal membership from the DuPage County Board and the DuPage Mayors And Managers Conference. Five members are appointed from each group with a County Board member and municipal member from each of the five County Board districts.

The Wastestream Reduction Committee was comprised of five County Board members. Its activities were coordinated with the Waste Planning Committee and vice versa by regular chairman's reports in each committee, each chairman serving on the alternate committee as a member. In 1991 this committee will be combined with the Waste Planning Committee. The new DuPage Waste Planning And Waste Reduction Committee will have five municipal members and five County Board members.

### 1.3.3 Authorities And Responsibilities

The Waste Planning/Reduction Committee has been authorized by the County Board to develop the solid waste plan for the County as required by Public Act 85-0990. The DuPage County Board is the designated governmental authority for implementation of the solid waste plan developed by the Waste Planning/Reduction Committee. However, the joint county/municipal committee is also empowered to direct the implementation of the plan. Public Act 85-14 sets out authorities allowed to the Waste Planning/Reduction Committee and the County Board relative to solid waste plan preparation and implementation. Key provisions are summarized as follows:

- The exercise of powers related to solid waste management are authorized throughout the county after adoption of the solid waste plan by the County Board.

- The County is authorized to plan for, enter into contracts for, and own and operate waste management systems.
- The County has the power to produce and sell any product resulting from the storage, treatment and disposal of waste, including but not limited to the generation of steam, hot water and electricity by combustion, refuse-derived fuel (RDF), and any recycled or reused materials withdrawn from the wastestream by activities of the County.
- The County is authorized to acquire land for the specified purposes.
- The County is authorized to regulate and control the method of disposal of wastes generated from any premises within the borders of the county.
- A process for formation of a Solid Waste Committee made up of equal County Board and municipal official membership is established with the authority to prepare and implement the plan.
- The County is authorized to prepare a Solid Waste Management Plan as is described in the Local Solid Waste Disposal Act.
- The County is authorized to [control] the disposal of waste within the borders of the county except that the County shall not have the authority to [control] the collection of waste within municipal corporate boundaries.
- In addition to revenue bond authority, the County is authorized to issue general obligation bonds for waste management facilities following approval by general referendum.

In addition to the above authorities, Public Act 85-0990 provides the County with the authority to require mandatory separation of recyclable components of the wastestream in order to implement the recycling elements of the solid waste plan.

## 1.4 PREVIOUS SOLID WASTE PLANNING EFFORTS

### 1.4.1 Introduction

Plan-1990 is preceded by three phases of solid waste planning. They can be described as technology review, detailed feasibility analyses, and a draft solid waste plan. Also, a landscape waste feasibility report was previously developed as was an interim version of a recycling plan. These previous reports are described in Sections 1.4.2 through 1.4.9. All were prepared by the Department of Environmental Concerns for review by the Wastestream Reduction and Waste Planning Committees. The reports are available as supplemental reports supporting this document and are listed as follows:

1. Alternatives Refuse Disposal Systems - Resource Recovery Phase I, February 1986.
2. DuPage County Solid Waste Recycling Study, November 1987.
3. DuPage County Solid Waste Waste-To-Energy Study, December 1987.
4. DuPage County Landfill/Ashfill Feasibility Study, January 1988.
5. DuPage County Solid Waste Management Summary Feasibility Report, January 1987.
6. DuPage County Solid Waste Management Landscape Waste Feasibility Report, August 1989.
7. DuPage County Solid Waste Recycling Plan - Phase I - Residential, November 1988.
8. DuPage County Solid Waste Management Plan, September 1988.

1.4.2 Alternative Refuse Disposal Systems - Resource Recovery  
Phase 1, February 1986

The first phase of solid waste planning consisted of preparation of one report titled Alternative Refuse Disposal Systems - Resource Recovery Phase 1, February, 1986. The purpose of this study was to review various solid waste disposal systems providing alternatives to the current disposal method of sanitary landfilling. A shortened list of preferred waste management technologies which represented commercially viable alternatives to current disposal methods was derived.

Thirty alternative solid waste disposal technologies were reviewed and compared to the existing sub-regional sanitary landfill method of refuse disposal. After review, the preferred technologies endorsed by the Waste Planning Committee and the County Board (reference Resolution SW-002-86) included in decreasing order of preference: mass burn incineration; refuse derived fuel for local reuse or resale; landfilling; and no action. For additional information regarding the detailed process by which this determination of preferred technologies was made, the reader is directed to the DuPage County Solid Waste Management Summary Feasibility Report, January 1988. At the same time that this expression for technology was made, the Waste Planning Committee also recognized the importance of recycling as a waste reduction measure. The County Board officially recognized that waste reduction through recycling should be a goal of DuPage County and its municipalities (reference Resolution SW-003-86). Therefore, recycling was incorporated into the preferred technologies for evaluation.

1.4.3 DuPage County Solid Waste Recycling Study, November 1987

This study assessed recycling as a waste disposal technology and included the following:

- A description of local community conditions
- An evaluation of recycling feasibility in light of local conditions
- An assessment of current recycling in DuPage County and other state and Illinois communities
- A review of recycling technologies and the formulation of alternative recycling program options appropriate for DuPage County
- The identification of implementation strategies and the estimation of program option costs
- An evaluation of markets for recyclable materials

The study recommended a framework for recycling plan development including the following six key elements:

- Program Organization and Initiation
- Expansion of Existing Programs
- Composting Program for Yard Wastes
- Establishment of Additional Drop-off Centers
- Curbside Collection
- Curbside/Industrial/Institutional Outreach

1.4.4 DuPage County Solid Waste Waste-To-Energy Study,  
December 1987

This study provided a detailed evaluation of the feasibility of construction of one or more waste-to-energy plants in DuPage County. Major components of the study included the following:

- Examination of the current solid waste collection and disposal systems in DuPage County, and an assessment of current and projected solid waste generation, expected seasonal variations, and wastestream composition
- Identification, description, and comparison of waste-to-energy technologies as recommended in Phase I
- Assessment of the availability and viability of potential energy markets for the sale of steam, hot water and electricity throughout the County

- Development of three alternative scenarios for waste-to-energy plants including design capacity, candidate sites, and energy products
- Evaluation of recommended alternatives
- Assessment of potential environmental impacts of proposed facilities and review of pertinent environmental regulations
- Examination of legal/institutional issues affecting project development and a proposed schedule for implementation

1.4.5 DuPage County Landfill/Ashfill Feasibility Study,  
January 1988

This study provided a detailed evaluation of the feasibility of siting and developing new sanitary landfill(s) or ash monofill(s) in the county. Major components of the study included the following:

- Examination of transport and disposal of waste in DuPage County
- Examination of regulations affecting provision and operation of landfill facilities
- Discussion of incinerator residue disposal considerations
- Examination of the economics of landfilling
- Examination of potential site availability for landfill development in the county utilizing a successively more restrictive site screening procedure
- Discussion of landfill development and ownership issues
- Identification of groundwater protection, leachate and gas management issues requiring consideration in design
- A proposed schedule for subsequent project development activities

1.4.6 DuPage County Solid Waste Management Summary Feasibility Report, January 1987

The summary feasibility report provided background information in satisfaction of Public Act 85-1319, The Solid Waste Management Act; summarized recommendations and conclusions from the recycling, waste-to-energy, and landfill/ashfill feasibility studies; and made overall recommendations listed below for solid waste management in DuPage County. An Executive Summary for DuPage County Solid Waste Management Summary Feasibility Report was also prepared as a separate document. Recommendations of the summary feasibility report included the following:

- The no-action alternative was not recommended because it did not insure long-term solid waste disposal capability for DuPage County residents. The no-action alternative would not provide options for long-term solid waste disposal capability in an environmentally sound, cost-effective manner.
- Waste reduction through recycling was recommended. Although recycling cannot by itself insure adequate disposal capability in an environmentally sound cost-effective manner, it maximizes the disposal capabilities of other options and was considered a necessary component of any waste disposal system.
- It was recommended that appropriate steps be taken to assure interim disposal capability until alternate facilities are placed on-line.
- Coordinated transportation of waste outside of the county for disposal was not recommended, at the time, due to current and future uncertainty over site(s) availability and financial and environmental liabilities.
- It was recommended that phased implementation of waste-to-energy be given additional consideration and analysis by the Committee.
- Additional broad recommendations were made with the above recommendations in mind. They were:
  1. If waste-to-energy technology is not pursued:

- waste reduction via recycling should be pursued to minimize landfilling;
- landfill capacity should be assured at existing sites or new sites with sites 9, 13, and 10 (identified in the Landfill/Ashfill Study) having apparently suitable geology based on very limited information; and
- "other sites"\* may be considered

2. If waste-to-energy technology is pursued:

- waste reduction via recycling should be pursued to minimize additional processing and landfilling;
- residue disposal capability should be assured at existing sites or new sites, with sites 9, 13, 10, and 7 having apparently suitable geology based on very limited information. Existing sites, as currently developed and operated, were not recommended for disposal of ash;
- Waste-to-energy facility(ies) should be provided to serve markets, in preliminary order of preference, at:
  1. Argonne National Laboratory;
  2. Naperville;
  3. A northern site for Commonwealth Edison; and
  4. "Other markets"\*

\* "Other sites and markets" are those facilities which may arise in the future and which are not currently identified

(Note: Sites 9 and 10 were subsequently dropped from consideration by the Committee. Much of site 13 was subsequently purchased by the Forest Preserve District.)

1.4.7 DuPage County Solid Waste Management Landscape Waste Feasibility Report, August 1989

The Landscape Waste Feasibility Report provides a comprehensive overview of the landscape waste practices and alternatives applicable to DuPage County. Although prepared after other feasibility reports it is described here due to its purpose as a feasibility report. The feasibility report addressed all aspects inherent in the management of the targeted wastestream from collection methods to processing and disposal options. This document served as the foundation for the county's planning and coordination activities directed towards timely compliance with Illinois Public Act 85-1430.

After a thorough assessment of the collection, processing and disposal alternatives available to DuPage County, the following recommendations were set forth in the Landscape Waste Feasibility Report. The recommendations were reviewed by the Wastestream Reduction Committee.

- The County should develop and implement a public education campaign to encourage source reduction of landscape waste. In particular, steps should be taken to encourage homeowners not to pick-up their grass clippings for collection and off-site disposal.
- The County and municipalities should take appropriate steps to attain flow control capability for landscape waste.
- The County should enact an ordinance prohibiting the open burning and illegal disposal of landscape waste in the unincorporated areas.
- Realizing that a composting site(s) will be required for the processing of landscape waste, while recognizing the inherent uncertainties associated with the management of this component of the wastestream, such facilities should be located at existing available sites suitable for such purposes on an interim basis.

- In order to facilitate a regional approach to landscape waste management, standardized collection practices for the target wastestream should be established.
- After establishment of (at a minimum) interim disposal capability, the County should move expeditiously to perform a comprehensive marketing survey and to develop a market/disposal strategy for processed landscape waste products.
- Data regarding generation rates and system requirements obtained from the interim landscape waste management operations should be used to develop plans for the establishment of long-term disposal capability. Fees charged for the provision of interim disposal should incorporate a surcharge to offset future project development costs.
- The alternative use of grass clippings as a daily cover material at local landfills should be pursued.
- Wood wastes should be addressed in a comprehensive manner with components. Processing capability for wood waste commingled with other landscape waste as well as any that is collected separately should be established.

1.4.8 DuPage County Solid Waste Recycling Plan - Phase I - Residential, November 1988

The Recycling Plan serves as an interim working document pending approval of a comprehensive solid waste plan. The recycling plan:

- Examined existing recycling programs in the area and offered observations on recycling status;
- Defined roles and responsibilities of entities to be involved in recycling program;
- Provided the conceptual design of a recycling system and program for the county; and
- Described an implementation mechanism for the recycling program.

The Recycling Plan was first released in September 1988 and revised in November 1988. The Recycling Plan was subjected to two

formal public comment processes. The second public comment period ended January 12, 1990 and the Recycling Plan as revised was approved by the Waste Planning Committee on January 17, 1990. The Recycling Plan was approved by the County Board on January 23, 1990 (reference Ordinance OSW-002-89). Public comments and subsequent revisions for the Recycling Plan have been compiled in the DuPage County Solid Waste Management Recycling Plan Phase I - Residential, Public Comment/County Response document dated January 12, 1990.

#### 1.4.9 DuPage County Solid Waste Management Plan, September 1988

This planning document was prepared as a draft version of a complete solid waste plan. It was prepared after preparation of the feasibility reports described above (except the Landscape Waste Feasibility Report) and after extensive public comment on the feasibility reports. Public comments were used in order to refine basic alternatives which had been presented in the feasibility reports. It recommended the development of a set of programs and facilities which together would provide DuPage County residents with a reliable system for environmentally responsible and cost-effective means of solid waste disposal.

The document recommended a detailed set of recycling programs and facilities to decrease the amount of waste requiring disposal by a minimum of 25% within five years. The proposed recycling program included curbside collection of materials; additional drop-off centers; central processing facilities for the sorting of collected materials and preparation for shipment to markets; a program for the collection and composting of yard wastes; and a commercial/industrial/institutional outreach program to encourage recycling there.

Supplementing the recycling program would be a waste-to-energy facility which would recover energy in the wastes remaining after recycling while also reducing the volume of waste requiring

disposal by landfilling. The provision of landfill capacity for those wastes not recycled or combusted as well as ashfill capacity for the ash generated by the waste-to-energy facility were also addressed.

The major recommendations presented in the document plan follow. The document was never endorsed by the Waste Planning Committee nor approved by the County Board and the following recommendations are presented only for historical perspective. **They do not constitute recommendations for Plan-1990.** For additional information regarding the justification of these recommendations, which represented nearly three years of investigation and analysis, the reader is directed to the supplemental reports.

1. The County should adopt a goal of reducing the amount of residential, commercial and industrial waste to be disposed by a minimum of 25% within five years through a combination of strategically selected recycling and waste diversion activities. (This goal was endorsed by County Board adoption of the Recycling Plan.)
2. Waste processing by waste-to-energy should replace landfilling as the primary means of disposal of non-recycled wastes.
3. Both of the existing publicly-owned sanitary landfills should not be closed in 1993, the time at which the operating contracts expire. If only one of the landfills is kept open, it is recommended that the Greene Valley Landfill be that facility.
4. The preferred location of a waste-to-energy facility in the county is adjacent to existing sanitary landfill operations at the Greene Valley landfill.
5. Disposal of residue from the proposed waste-to-energy facility should occur at a specially designed monofill cell(s) at the Greene Valley Landfill.
6. The County should proceed immediately with subsequent activities leading to implementation of a waste-to-energy facility.

7. The need for a transfer station and a separately sited ashfill should be evaluated and addressed as part of subsequent solid waste planning efforts.
8. The County should proceed with those actions which are necessary to implement, within DuPage County, the disposal facilities recommended in the plan. However, the County should not preclude the possibility, until necessary, of using out-of-county disposal facilities as long-term waste management methods, if such facilities can meet required assurances for environmental protection, financial commitments and long-term dedicated capacity.
9. The County should pursue the schedule provided to implement the plan.

#### 1.5 STATUS OF PREVIOUS SOLID WASTE PLANNING EFFORTS

A description of activities related to review and public comment on the reports preceding the DuPage County Solid Waste Management Plan, September 1988 is contained in that document. That plan document was met with much criticism at the time of its release due to its consideration that at least one, if not both, of the existing landfills in DuPage County would be available for disposal for an extended period of time and at least beyond the contract termination dates of 1993. However, the controlling contracts for the operation of the two landfill sites fall under the authority of the DuPage Forest Preserve District and the decision to extend the contract completion dates had not been made.

Summarizing previous opposing public comments made relative to site selection, when alternatives for waste disposal which involved new sites in the county were discussed, public reaction was that existing sites had much remaining capacity and that new sites were not needed. However, when the continued use of existing sites was discussed, public reaction from surrounding residents was that the existing sites should be closed when the current contracts for operation expire in 1993.

In 1989 the Waste Planning Committee suspended the discussion of alternatives for the long-term disposal of waste pending clarification of contract status by the Forest Preserve District. The Waste Planning Committee took this action after realizing that its consideration of waste disposal options and, especially, its credibility in being able to present disposal options to the public hinged upon some resolution of whether or not the existing landfills would be available for an extended period of time in the future. Although the status of contracts for operation had not been resolved by the Forest Preserve District at the time of initial preparation of this document, the Forest Preserve District had determined that the two existing landfills should be filled to their permitted capacities and not be closed prior to reaching those capacities (reference FPD Resolutions 90-202 and 90-203).

On November 28, 1990 the Forest Preserve District approved amendments to the two landfill operating contracts which will substantially change the manner of waste receipt at the two sites in the future. The amendments, effective in 1992, will allow the Forest Preserve to limit the receipt of waste and effectively allow for the landfills to receive DuPage waste for an extended period of time.

The Review Draft editions of Waste Plan-1990 were issued in October of 1990. The current version of Plan-1990 has been revised throughout to reflect this important development in providing local solid waste disposal capability.

#### 1.6 OBJECTIVES AND CONDITIONS OF THE PLANNING EFFORT

The principal objective in the preparation of Plan-1990 is to provide options for long-term solid waste disposal capability first in an environmentally sound and, second, in a cost-effective manner for the residents of DuPage County. Plan-1990 has been prepared in order to meet the requirements of Public Act 85-0990 which mandates

its preparation and adoption as well as to serve as a tool for the County of DuPage in implementation of a comprehensive solid waste management strategy for the future.

Key conditions and limits which have been important in defining scope, emphases, and assumptions of the waste planning efforts are as follows:

- Service Area: The defined service area for this planning effort is the County of DuPage with the consideration of DuPage County communities that may have borders which may extend beyond county lines to participate in the County's program. Communities with at least 33 percent of their population in the county now or during the planning period are allowed this option (reference Resolution SW-0002-90).
- Wastestream: Wastestreams proposed for service include residential, commercial, institutional, industrial and construction/demolition waste generally regarded as municipal solid waste.
- Preference For Waste Management Techniques: The planning effort has been conducted to conform with the State of Illinois' waste management hierarchy as required by Public Act 85-0990 and as directed by the County Board in resolutions SW-002-86 and SW-003-86.
- Existing Disposal Sites: The two existing landfill sites in DuPage County are owned by the Forest Preserve District with operations contracted out to private operators. The contracts for operation were amended by the Forest Preserve and the operators on November 28, 1990. The amendments effectively allow for the two landfills to remain open until filled to capacity and allow filling operations to be limited thereby allowing for the sites to remain open for an extended period of time. Plan-1990 assumes that the two landfills will be available for final disposal for an extended period of time. However, options which could replace existing landfill operations as the final disposal sites are assumed to not be implemented until such time as the two existing landfills are no longer available or disposal is limited. Options preceding final disposal and providing for the processing or preparation of waste prior to final disposal could be implemented while the two existing landfills are operational in order to provide additional disposal capacity.

- Planning Period: The period used for analyses in Plan-1990 is the 20 year period from 1990 to 2010. However, the options presented which would by their implementation replace the two existing landfills may not be implemented for several years. Therefore, this document addresses a planning period which may extend beyond the 20 year planning period identified.

plan1

**SECTION 2.0**  
**EXISTING SOLID WASTE MANAGEMENT SYSTEM**  
**AND ASSESSMENT OF NEEDS**

**2.1 PLANNING AREA (DUPAGE COUNTY) LOCATION AND DEMOGRAPHICS**

Located in northeastern Illinois, DuPage County is bordered by Cook County to the east and north, Kane County to the west, and Will County to the south. Figure 2-1 illustrates the location of DuPage County within the State of Illinois. DuPage County's boundaries encompass 332 square miles. The county is divided into nine townships and includes 35 incorporated cities or villages, 23 of which lie wholly within the county. A map of the county identifying the location of individual municipalities is presented as Figure 2-2.

Twenty miles west of Chicago, DuPage County's proximity to the highly urbanized areas of the greater Chicago metropolitan area has historically had a significant impact upon its solid waste management system. DuPage County itself has become more metropolitan over the past 15 years. The sustained economic growth experienced in the area has had a clear effect upon its demographic characteristics.

According to the U.S. Census Bureau, approximately 658,876 people resided in DuPage County in 1980. Recent projections developed by the DuPage County Planning Department indicate that the population will have climbed to 813,806 by 1990, an increase of over 23% in just ten years. By the year 2000 the population is expected to increase another 6% to approximately 922,631 people.

The major catalyst fueling this dramatic increase in population has been the impressive amount of economic development occurring within the planning area. DuPage County has enjoyed an expansion in a variety of commercial sector activities ranging from

FIGURE 2-1

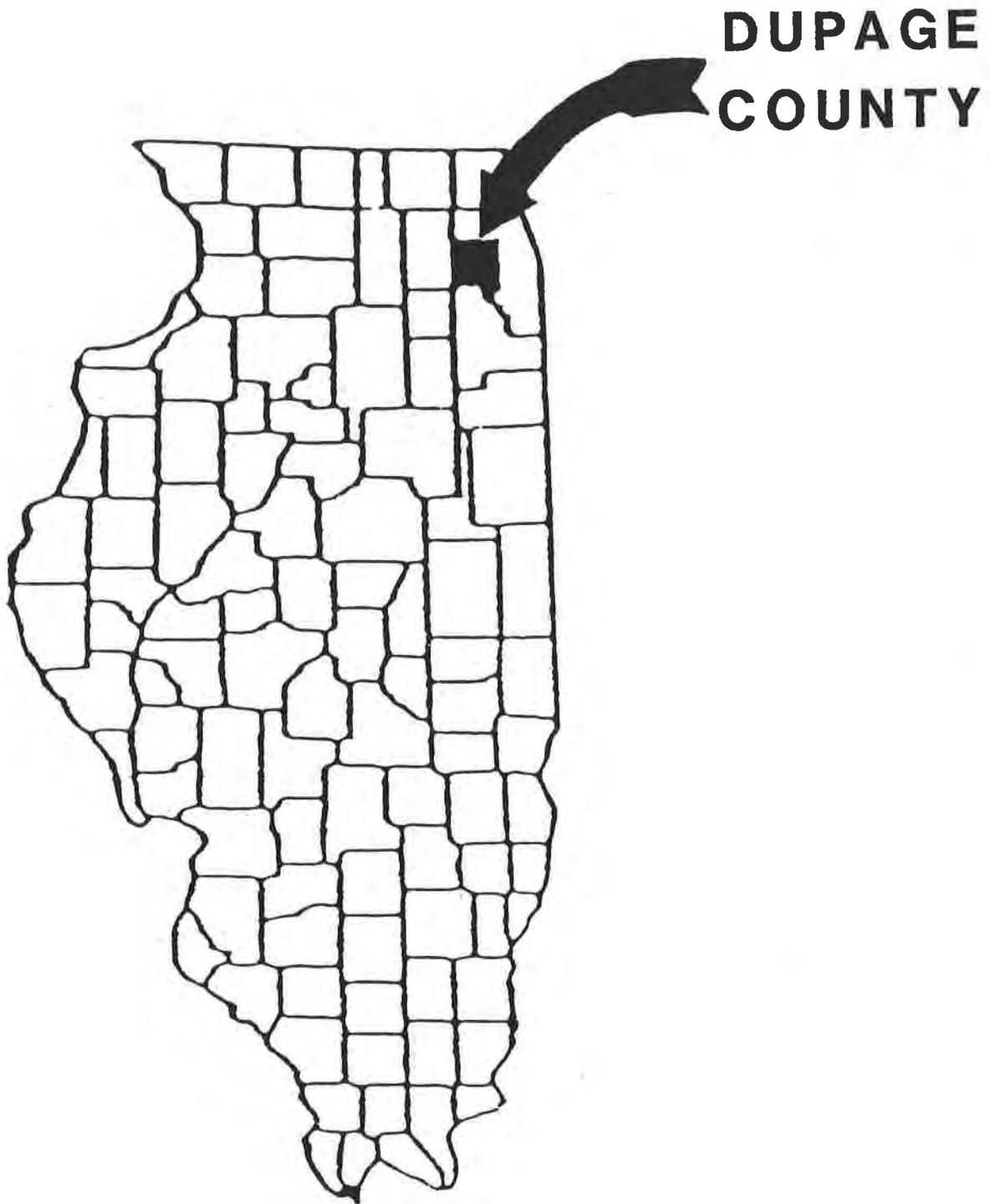
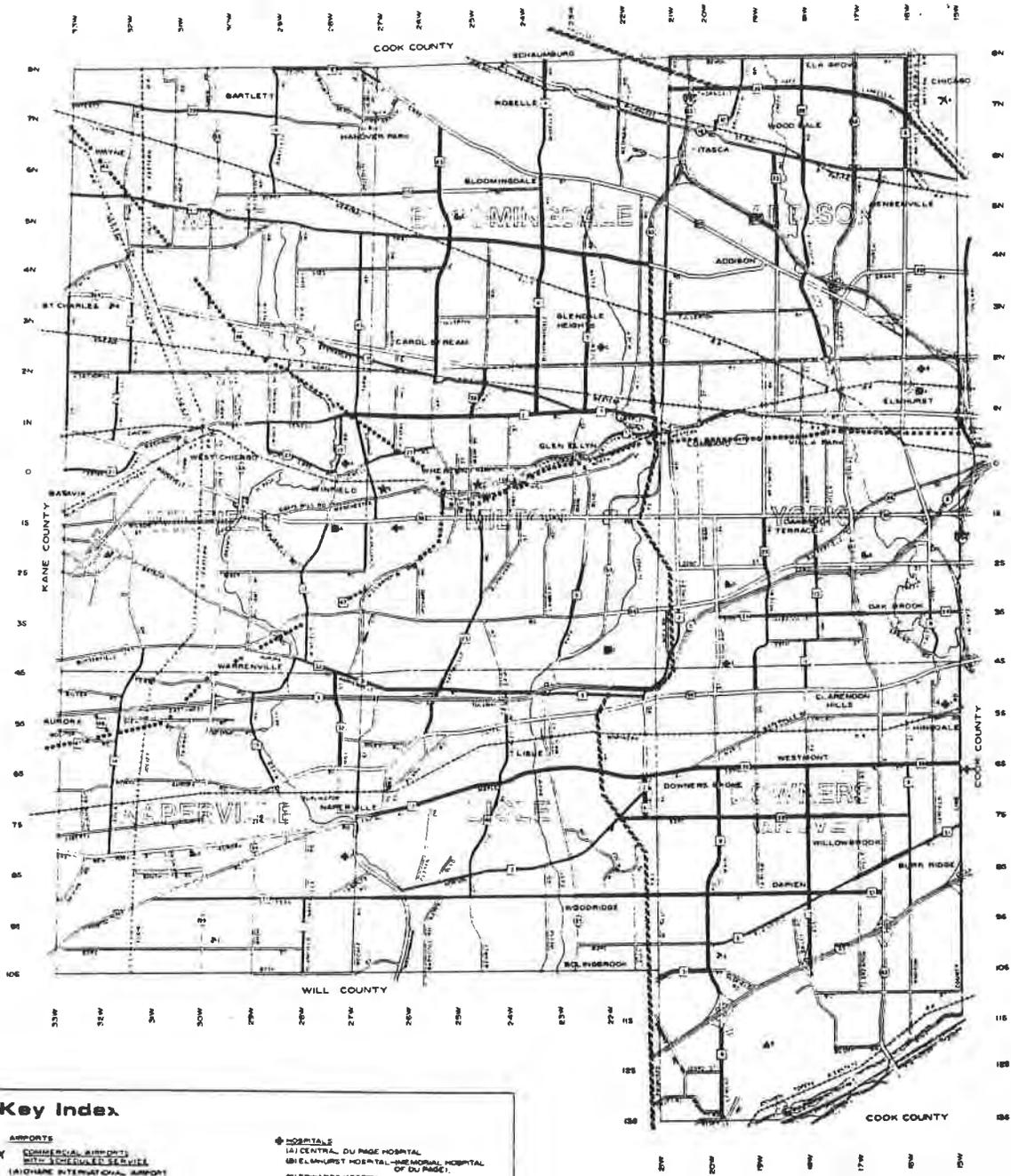


FIGURE 2-2

# DuPage County



**Key Index**

**AIRPORTS**

- X COMMERCIAL AIRPORT WITH SCHEDULED SERVICE
  - (A) MIDWINTER INTERNATIONAL AIRPORT
- 2 OTHER AIRPORTS
  - (E) SCHWABBURG FIELD
  - (D) AIRPORT STATES (PRIVATE)
  - (L) LAKE BROOKS RIDGE (PRIVATE)

**GOVERNMENT FACILITIES**

- ★ DU PAGE COUNTY GOVERNMENT
  - (A) DU PAGE CENTER HEALTH DEPARTMENT, COMPLEMENT CENTER, YOUTH HOME, ANIMAL CONTROL, HIGHWAY DEPARTMENT, CIVIL DEFENSE, COUNTY JAIL, SHERIFF
  - (B) COURT HOUSE, PROBATION DEPARTMENT, PUBLIC DEFENDER, STATE'S ATTORNEY
  - (C) COUNTY HISTORICAL SOCIETY MUSEUM
- ▲ UNITED STATES GOVERNMENT
  - (A) ARMOING NATIONAL LABORATORY
  - (B) PERM NATIONAL ACCELERATOR LABORATORY

**HOSPITALS**

- (A) CENTRAL DU PAGE HOSPITAL
- (B) ELMHURST HOSPITAL - MEMORIAL HOSPITAL OF DU PAGE
- (C) EDWARDS HOSPITAL
- (D) GLENDALE HEIGHTS COMMUNITY HOSPITAL
- (E) GOOD SAMARITAN HOSPITAL
- (F) HINSDALE HOSPITAL
- (G) HARMONJOY REHABILITATION HOSPITAL
- (H) SUBURBAN HOSPITAL

**SHOPPING CENTERS**

- (A) FOX VALLEY CENTER
- (B) OAK BROOK CENTER
- (C) STRATFORD SQUARE
- (D) VORTOWN CENTER

**POINTS OF INTEREST**

- (A) GANTIGNY-ROBERT RACCONICK MUSEUM
- (B) LIZZADRO MUSEUM OF LAPIDARY ART
- (C) MORTON AIRPORT LHM

**Legend**

- TWO LANE ROAD
- FOUR LANE ROAD
- DIVIDED HIGHWAY
- PROPOSED ROAD
- RAILROAD
- COUNTY ROUTE
- STATE ROUTE
- U.S. ROUTE
- INTERSTATE ROUTE
- COUNTY BOUNDARY LINE
- TOWNSHIP BOUNDARY LINE
- DUREN PARKWAY
- ILLINOIS PRAMIE PATH



manufacturing to retail services. Several large corporations have located their home offices and/or research centers within the area. Employment statistics provided by the Planning Department reflect this trend. In 1985, 376,630 people found employment in DuPage County. Projections show this number increasing to 415,857 (up 10.4%) by 1990.

This rapid expansion of the job market within DuPage County is expected to continue throughout the 1990's. By the year 2000, the estimated number in the work force will have reached about 521,600 - a dramatic 28% increase in just 15 years. Considered to be one of the most affluent counties within the United States, the per capita income for DuPage County residents was estimated at \$16,924 in 1987. The economic prosperity experienced within the area over the past ten years has important implications for this planning effort. For example, the relative affluence found within the county will translate into a higher than average per capita waste generation rate.

Accompanying this steady economic growth, there has been a significant increase in the assessed valuations within the county. During the 1980's, the total assessed valuations for DuPage County more than doubled - exceeding \$12 billion by 1989. A portion of this increase can be attributed to the construction of residential dwellings intended to house the influx of individuals finding employment within the county. By 1985 a total of 169,040 single family households and 83,010 multiple family households had been established in DuPage County (67% and 33% of the total, respectively). Projections made by the Planning Department indicate that the county can expect the total number of households to increase by about 33% by the year 2000. The growth in the number of multiple family dwellings during this period is expected to narrow the gap between single family and multiple family households. By 2000 it has been estimated that there will be

202,210 single family units (60.4%) and 334,640 multiple family units (39.6%).

According to projections made by the Northeastern Illinois Planning Commission (NIPC), this expansion is expected to continue over the next twenty years. The impressive growth rates experienced in DuPage County since the early 1980's have established it as one of the fastest growing counties in the Midwest. This rapid fluctuation in the demographic characteristics of the planning area will necessitate the continuous monitoring of population and employment trends. This activity would be especially important prior to the construction of any large scale disposal facilities.

## 2.2 EXISTING WASTE COLLECTION, DISPOSAL AND MANAGEMENT SYSTEMS

### 2.2.1 State of Illinois and Northeast Illinois

In October, 1990, the IEPA prepared its fourth annual report on "Available Disposal Capacity for Solid Waste in Illinois." This report indicates that northeastern Illinois currently has 25 active solid waste landfills and 1 waste-to-energy facility. These facilities are listed in Table 2-1 and their locations are shown in Figure 2-3. The region's waste-to-energy facility and landfills reported a total available capacity of 167,707,092 cubic yards as of April 1, 1990. Table 2-2 provides a summary of disposal practices by county. Available data on landfill capacity and disposal volumes was used to estimate the life expectancy of the existing solid waste capacity in northeastern Illinois. The IEPA report contends that at current disposal rates, the region's capacity is likely to be exhausted between 1995 and 1997.

**TABLE 2-1  
SOLID WASTE DISPOSAL CAPACITY IN NORTHEASTERN ILLINOIS  
AS OF 10/90**

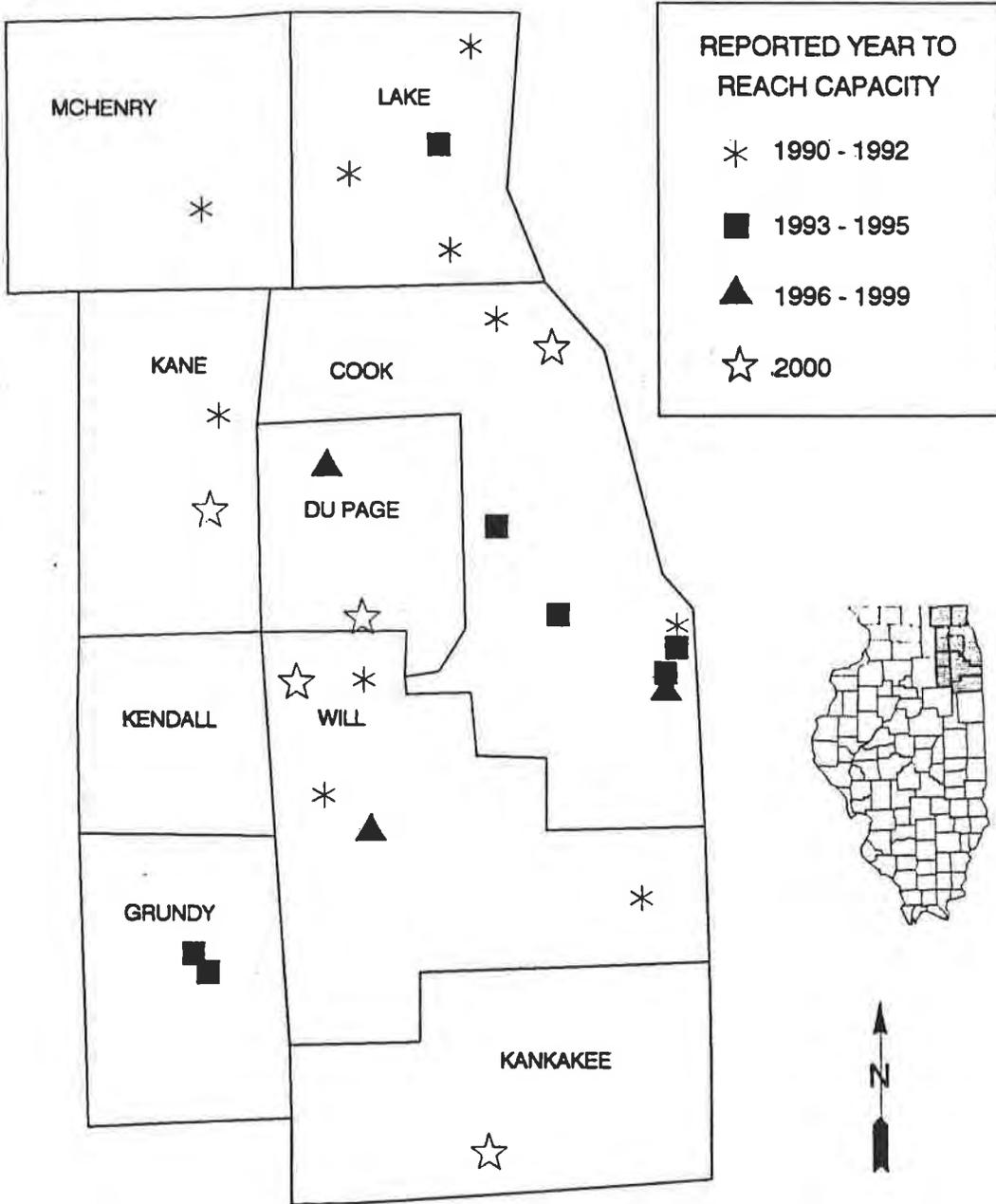
Facility (reported)	Remaining Capacity (cu. yd.)	Waste Disposed (cu. yd.)	Years Remaining (reported)
<u>COOK</u>			
American Grading Co.	596,957	141,360	4
Chicago Heights Refuse	0	0	0
Chicago Northwest Incinerator		1,322,893	
CID #2 (WMI)	11,179,746	1,728,648	6
Fitz-Mar Landfill	0	120,569	0
Lake Landfill (WMI)	9,656,286	3,366,508	2
Land & Lakes #3	2,438,728	662,203	4
Land & Lakes #2	946,061	1,009,516	1
Land & Lakes (Dolton)	1,503,590	179,825	3
Paxton Landfill #2	0	891,159	0
Sexton (Lansing)	0	394,874	0
Sexton #2	6,918,975	2,981,025	3
Winnetka Municipal	436,208	43,896	10
<u>DUPAGE</u>			
Greene Valley (WMI)	36,566,505	2,612,508	14
Mallard Lake	29,668,692	4,248,854	7

TABLE 2-1 (Cont.)

Facility (reported)	Remaining Capacity (cu. yd.)	Waste Disposed (cu. yd.)	Years Remaining (reported)
<u>KANE</u>			
Settler's Hill (WMI)	21,338,258	1,900,151	11
Woodland Landfill (WMI)	12,376,325	820,442	15
<u>LAKE</u>			
Land & Lakes (Wheeling)	737,654	367,034	2
ARF Landfill Corp.	1,075,289	711,269	2
BFI #2	1,429,051	1,358,354	1
Lake Bluff Muni. #2	1,080	0	3
Lake County Grading Co.	663,107	136,894	5
Zion Municipal #2	0	2,654	0
<u>MCHENRY</u>			
McHenry Co. Sanitary Landfill	92,953	57,346	2
<u>WILL</u>			
Wheatland Prairie	10,432,199	375,403	28
CDT Landfill Corp.	606,680	953,252	1
Land & Lakes (Lemont)	592,160	521,444	1
Beecher Development	5,789,058	1,210,942	2
ESL, Inc.	890,500	120,483	7

Source: IEPA, Available Disposal Capacity  
for Solid Waste in Illinois, October, 1990

**FIGURE 2-3**  
**REGION 2 - 1990 ACTIVE NON-HAZARDOUS LANDFILLS**  
**SUBJECT TO STATE FEE**



SOURCE: IEPA, AVAILABLE DISPOSAL CAPACITY FOR SOLID WASTE IN ILLINOIS, OCTOBER, 1990

**TABLE 2-2  
SOLID WASTE DISPOSAL AND CAPACITY BY COUNTY  
1990**

COUNTY	TOTAL WASTE GENERATED (cu yds)	TOTAL WASTE DISPOSED (cu yds)	TOTAL REMAINING CAPACITY (cu yds)
COOK	22,145,615	12,842,476	33,676,551
DUPAGE	2,551,840	6,861,362	66,235,197
KANE	1,291,097	2,720,593	33,714,583
LAKE	2,509,850	2,576,205	3,905,101
MCHENRY	688,344	57,346	92,953
WILL	859,783	3,181,524	18,310,597
<b>TOTAL</b>	<b>30,046,529</b>	<b>28,239,506</b>	<b>155,934,982</b>

Source: IEPA, Available Disposal Capacity for Solid Waste in Illinois, October, 1990

Provision of additional capacity within northeastern Illinois has been considerably limited. The most often cited factor affecting the provision of new or expanded waste disposal facilities in Illinois is Public Act 82-682, an "Act Related To The Location of Sanitary Landfills and Hazardous Waste Disposal Sites" (SB-172).

The SB-172 process applies to Regional Pollution Control Facilities (RPCF). The IEPA defines a RPCF as any waste storage site, sanitary landfill, waste disposal site, waste transfer station, waste treatment facility or waste-to-energy facility that accepts waste from or that serves an area that exceeds or extends over the boundaries of any local general purpose unit of government. Excluded from the definition of "Regional Pollution Control Facility" are:

1. Sites located within the boundary of a local general purpose unit of government and intended to serve only that entity;
2. Waste storage sites regulated under 40 CFR (Code of Federal Regulations), Part 761.42;
3. Sites used by any person for waste storage, treatment, disposal, transfer, or incineration operation for wastes generated by such person's own activities, when such wastes are stored, treated, disposed of, transferred or incinerated within the site owned, controlled or operated by such person, or when such wastes are transported within or between sites owned, controlled or operated by such person;
4. Sites at which the State is performing removal or remedial action pursuant to Section 22.2 (of the Act); or
5. Sites used by any person to specifically conduct a landscape waste composting operation; abandoned quarries used solely for the disposal of concrete, earth materials, gravel or road construction debris conducted by a unit of government or underground construction activities conducted by a public utility company; or regional facilities as defined in the Central Midwest Interstate Low-Level Radioactive Waste Compact.

A proposer of a RPCF must not only seek a permit from the IEPA but must also first file a site approval request with the local government (siting authority) in which the facility is to be located. The requirements of SB-172 set out specific and detailed procedural requirements which may be summarized as follows:

1. IEPA will not issue a permit for the new site until the permit applicant can show that the location of the facility has been approved by a county or municipal government;
2. The applicant must comply with certain notice requirements and must present a proposal which meets the site criteria of the law;
3. The public is afforded notice of the proposal and an opportunity to comment on it; and
4. The local officials are assigned the responsibility of examining the application and public comments and must make a determination as to whether the site meets the requirements of the law.

The provisions of SB-172 require the local siting authority to consider the application only within the context of criteria listed below. The SB-172 process as such supersedes local zoning requirements. Criteria to be considered include:

1. The facility is necessary to accommodate the waste needs of the area it is intended to serve;
2. The facility is so designed, located and proposed to be operated that the public health, safety and welfare will be protected;
3. The facility is located so as to minimize incompatibility with the character of the surrounding area and to minimize the effect on the value of the surrounding property;
4. The facility is located outside the boundary of the 100 year flood plain or the site is flood-proofed;
5. The plan of operations for the facility is designed to minimize the danger to the surrounding area from fire, spills, or other operational accidents;
6. The traffic patterns to or from the facility are so designed as to minimize the impact on existing traffic flows;
7. If the facility will be treating, storing or disposing of hazardous waste, an emergency response plan exists for the facility which includes notification, containment and evacuation procedures to be used in case of an accidental release; and
8. If the facility is to be located in a county where the county board has adopted a solid waste management plan, the facility is consistent with that plan; and
9. If the facility will be located within a regulated [groundwater] recharge area, any applicable requirements specified by the Board for such areas have been met.

The apparent effect of SB-172 is that it has substantially altered the siting of new facilities. With increased local control over facility approval, developers are being held to an extremely high standard. Further, the process incorporates a lengthy and often expensive appeal process culminating in potential final decision-making by the Illinois Supreme Court. At the very least,

SB-172 has substantially complicated the provision of new waste facilities and is playing a major role in the developing solid waste disposal crisis.

### 2.2.2 DuPage County

The principle method of solid waste disposal in DuPage County is sanitary landfilling. The IEPA-permitted landfills located within DuPage County serving as disposal facilities for municipal solid waste are located at Greene Valley and Mallard Lake Forest Preserves. Both facilities are owned by the Forest Preserve District of DuPage with operations contracted to private firms.

E & E Hauling, a subsidiary of Browning Ferris Industries, operates the Mallard Lake facility while Waste Management of Illinois operates the Greene Valley facility. The purpose set forth for landfilling activities on Forest Preserve District land is the development of recreational facilities. The above-ground fills are proposed to provide topographic relief for recreational purposes. The contracts for operation of the sites were approved in 1974 and until recently were set to expire in term in 1993. On November 28, 1990 the Forest Preserve District adopted amendments to contracts at both sites which will allow the sites to remain open until filled to permitted capacities.

Other facilities within the county which provide restricted waste disposal needs include Argonne National Laboratory landfill and Elmhurst-Chicago Stone Quarry. The Argonne facility is used for waste generated on-site. Table 2-3 lists the 1989 annual disposal volumes of the landfills within DuPage County indicated by the facility operators. Landfills located outside of the county which receive wastes generated in DuPage County are shown in Figure 2-4.

**TABLE 2-3  
1989 ANNUAL DISPOSAL VOLUMES**

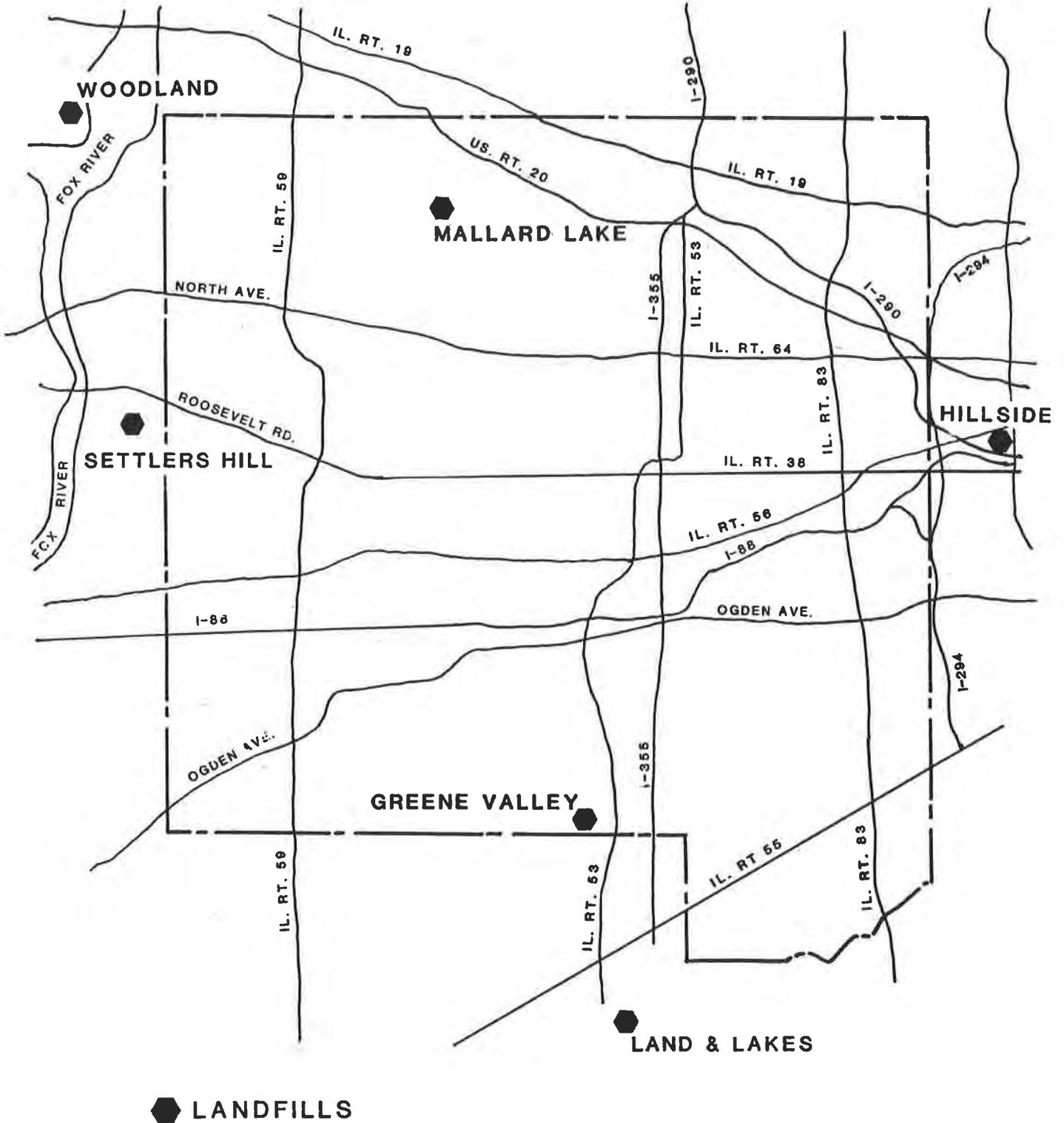
<u>Site</u>	<u>Solids</u>	<u>Liquid</u>
- Mallard Lake Landfill	4,760,909 cu. yd.	1560 cu. yd.
- Greene Valley Landfill	3,747,304 cu. yd.	---
- Argonne National Laboratories	35,000 cu. yd.	---
- Elmhurst-Chicago Stone	75,000 cu. yd.	---

Solid waste generated within DuPage County is collected by private scavenger services through one of several arrangements including private collection, contract collection, or franchise collection. In DuPage County there is one municipality which depends on private collection, thirteen which contract for collection, and twenty-three which franchise collection. A description of these services is provided in Appendix A-1.

Waste collection in the unincorporated areas of the county is generally unregulated, whereby residents either make individual arrangements with scavengers or, in a limited number of cases, haul their own refuse to a sanitary landfill. Commercial wastes generally are collected on a private basis and a number of communities license these scavengers. Disposal arrangements for industrial waste include collection of different components of the waste stream by specialty scavengers which may recycle, salvage, or conduct special disposal; disposal and/or treatment on site; or a combination of these methods.

In 1987, the IEPA Division of Air Pollution Control's Boiler Report identified 44 permitted incineration facilities within DuPage County. These facilities include 17 commercial sites, 17 schools, 7 hospitals, and 3 animal hospitals. Referencing the DuPage County Solid Waste Management Summary Feasibility Report (January 1988), Table 2-4 summarizes the categorized volumes of waste incinerated for volume reduction as reported in the feasibility report.

FIGURE 2-4  
MAP OF LOCAL LANDFILLS



**TABLE 2-4  
WASTE INCINERATION VOLUME**

- Schools	355 tons/year
- Commercial/Industrial	1,536+ tons/year
- Hospitals	1,796+ tons/year
- Animal Hospitals/Crematoria	275+ tons/year
-----	
<b>Total</b>	<b>3,962+ tons/year</b> or approximately 11 tons/day

According to the 1987 "Inventory of Waste-to-Energy Facilities in Illinois", prepared by the Illinois Department of Energy and Natural Resources, two facilities reported energy recovery. They are Hinsdale Hospital and Good Samaritan Hospital. Both reportedly use generated steam for hospital use. Reported installed capacity was 43.2 tons per day with average processed tonnage equalling 6.4 tons per day.

Table 2-5 summarizes the above information and also includes current data for recycling and landscape waste diversion/composting which is described in greater detail in Appendix A-2.

**TABLE 2-5  
WASTE MANAGEMENT SUMMARY**

<u>Waste Management Method</u>	<u>Quantity</u>
- Landfilled (last updated 1989)	8,619,773 cu.yd./yr.
- Incinerated (last updated 1987)	3,962 cu.yd./yr.
- Incinerated with Energy Recovery (last updated 1987)	2336 tons/yr.
- Composted at a Municipal or Regional Facility (1990)	89,015 cu.yd. (1)
- Recycled	
- residential: multi-material drop off centers and curbside collection (1990)	35,573 tons (2)
- commercial/industrial/institutional (1990)	21,219 tons (3)
(1) Reported volumes from the Naperville landscape facility and the DuPage County landscape waste site for 1990.	
(2) DuPage Department of Environmental Concerns' estimate based on the program's September/October 1990 volume average multiplied by the program's duration.	
(3) DuPage Department of Environmental Concerns estimate assumes level similar to residential rate.	

**2.3 CURRENT AND PROJECTED WASTE GENERATION QUANTITIES**

Appendix A-1 NEEDS ASSESSMENT describes in detail the methods which have been used to estimate waste generation quantities for DuPage County. There are three categories of municipal waste examined in Plan-1990 including "residential", "commercial/industrial/institutional", and "construction/demolition".

Waste generation estimates were previously developed in 1988 during preparation of the DuPage County Solid Waste Waste-To-Energy Study. According to that study, estimated per capita waste generation quantities were 2.1 pounds per capita per day for residential; 1.7 pounds per capita per day for commercial; 1.0 pounds per capita per day for industrial; and 0.7 pounds per capita per day for construction/demolition.

Waste generation estimates have been recalculated during the preparation of Plan-1990 utilizing the latest information available. The methodology employed for estimates in each wastestream category as described as follows.

1. Residential Waste Generation: A survey of DuPage municipalities was conducted to determine local waste generation rates. Only seven DuPage municipalities were able (or agreed to) provide waste generation data for this purpose. Data collected by the Forest Preserve District of DuPage during its 1990 survey of waste received at the landfills was also examined.

This data was averaged to arrive at an average 1990 waste generation figure of 3.5 pounds per capita per day for this component of the wastestream. This waste generation quantity was compared to the waste generation quantity for this component as prepared by five other Illinois counties involved in solid waste planning and was found to be supportable considering the relative levels of urban development.

2. Commercial/Industrial/Institutional: The derivation of generation estimates for this waste category is difficult. Reasons for this difficulty include the fact that this category of waste is collected by private haulers who do not have set collection boundaries; do not distinguish between commercial, industrial and institutional accounts; and, most importantly, are generally unwilling to discuss specifics of their collection routes.

For the preparation of Plan-1990, a new modelling program supplied by the Illinois Department of Energy and Natural Resources (IDENR) to local governments involved in solid waste planning has been used for generation estimates for this waste category. The modelling program, "WASTE PLAN", generates estimates for this component of the wastestream given certain data inputs for the area to be modelled including:

- Retail & Merchandise - Sales
- Furniture & Home Furnishings - Sales
- Food Stores - Sales
- Restaurants - Sales
- Schools - Number of students
- Nursing Homes - Number of beds
- Office Buildings - Total square feet
- Large & Small Manufacturing - Number of employees

Plan-1990 has used data generated by WASTEPLAN for estimating the per capita waste generation quantity for the commercial/institutional/industrial component of the wastestream. The estimated 1990 waste generation quantity for the commercial, industrial and institutional component is 2.2 pounds per capita per day.

3. Construction/Demolition: In order to derive the waste generation estimate for this category of waste, the results from the "Survey Of Origin Of Waste: Greene Valley & Mallard Lake" prepared by the Forest Preserve District has been used. According to this report, the waste generation estimate for this category of waste has been estimated at 2.3 pounds per capita per day.

The Forest Preserve District also defines a category of "dirt/clay/sludge" for receipt of waste of the two landfills. This category of waste is estimated to add an additional approximate 2.0 pounds per capita per day to waste generation estimates.

Using the above estimates results in a base waste generation estimate of 8.0 pounds per capita per day for DuPage County. The addition of the category of "dirt,clay/sludge" adds approximately 2.0 pounds per capita per day. However, these materials have not been included in the overall waste generation estimates for the County. The following table provides the waste generation estimates for DuPage during the planning period.

<u>Year</u>	<u>Population</u>	<u>Per Capita Generation(lbs)*</u>	<u>Tons of Waste Generated</u>	
			<u>Per Day</u>	<u>Per Year</u>
1990	781,200	8.0	3,125	1,140,625
1995	847,600	8.3	3,518	1,284,070
2000	901,178	8.6	3,875	1,414,375
2005	936,300	8.9	4,166	1,520,590
2010	985,000	9.3	4,580	1,671,700

\*excludes dirt/clay/sludge (~2 lbs/capita/day)

In the consideration and design of any solid waste disposal facilities the size (capacity) of the facilities has a direct bearing on cost and, for landfills, life expectancy. The waste generation quantities presented in the above table must be regarded as estimates of a theoretical average until later confirmed by actual measurement of waste. Several variables will influence this expected waste generation including the following:

- Are the assumptions made about waste generation accurate?
- What is the variability in the daily waste generation amount?
- Are the estimates for future population accurate?
- Are the assumptions for the increase in waste generation and changes in the wastestream which influence waste generation accurate?

Prior to the construction of capital intensive facilities targeting processing or disposal of the total wastestream, additional data should be collected to determine actual waste quantity and daily variability. Such information could also be vital to the County's efforts to document recycling levels. Unfortunately, the collection of more detailed information will probably be impossible without increased reporting requirements from haulers and municipalities. However, this seems unlikely in the near future based upon the general unavailability of information produced during previous surveys by the County's Solid Waste Division.

#### 2.4 CHARACTERIZATION OF WASTE

The following two pages represent modelled waste characterizations for the residential and commercial/industrial/institutional waste categories. The charts have been generated by WASTE PLAN.

#### 2.5 EXISTING DISPOSAL CAPABILITIES

The principal method of disposal in DuPage County at this time is landfilling. The vast majority of waste is disposed at Mallard Lake and Greene Valley landfills. The Illinois Environmental Protection Agency (IEPA) has estimated that the disposal capacity in northeastern Illinois, including Mallard Lake and Greene Valley, will be completely depleted sometime between 1994 and 1996 if

# CHARACTERIZATION OF MATERIALS

## RESIDENTIAL WASTE STREAM SUMMARY

### TOTAL RESIDENTIAL WASTES GENERATED (TONS PER YEAR):

WASTE NAME	1990
Newspapers	40,917
Books and Magazines	27,445
Office Paper	2,994
Commercial Printing Paper	7,485
Tissue and Towel	14,970
Nonpackaging Paper(junkmail)	5,988
Packaging Paper/Paperboard	14,471
Corrugated Cardboard	25,449
Glass Containers(clear)	25,948
Glass Containers(green)	13,972
Glass Containers(amber)	8,982
Misc Glass	4,990
Aluminum Containers/packaging	4,990
Misc Scrap Aluminum	2,994
Ferrous Containers	12,475
Major Appliances	13,972
Miscellaneous ferrous Scrap	19,461
Plastic Containers/Packaging	19,461
Nonpackaging Plastic	15,968
Leaves	71,356
Yardwaste (grass and brush)	50,897
Stumps	13,972
Woodwaste (pallets, etc)	2,994
Foodwaste	31,935
Textiles	8,982
Leather/Rubber	9,980
Tires	6,487
Ceramics, Misc Inorganics	15,469
Miscellaneous Organics	3,992
<hr/>	
TOTALS	498,992

### PER CAPITA WASTE GENERATION (POUNDS PER PERSON PER DAY)

WASTE NAME	1990
Newspapers	0.29
Books and Magazines	0.19
Office Paper	0.02
Commercial Printing Paper	0.05
Tissue and Towel	0.11
Nonpackaging Paper(junkmail)	0.04
Packaging Paper/Paperboard	0.10
Corrugated Cardboard	0.18
Glass Containers(clear)	0.18
Glass Containers(green)	0.10
Glass Containers(amber)	0.06
Misc Glass	0.04
Aluminum Containers/packaging	0.04
Misc Scrap Aluminum	0.02
Ferrous Containers	0.09
Major Appliances	0.10
Miscellaneous Ferrous Scrap	0.14
Plastic Containers/Packaging	0.14
Nonpackaging Plastic	0.11
Leaves	0.50
Yardwaste (grass and brush)	0.36
Stumps	0.10
Woodwaste (pallets, etc)	0.02
Foodwaste	0.22
Textiles	0.06
Leather/Rubber	0.07
Tires	0.05
Ceramics, Misc Inorganics	0.11
Miscellaneous Organics	0.03
<hr/>	
TOTAL	3.50

# CHARACTERIZATION OF MATERIALS

## COMMERCIAL WASTE STREAM SUMMARY

### TOTAL COMMERCIAL WASTES GENERATED (TONS PER YEAR):

WASTE NAME	1990
Newspapers	7,265
Books and Magazines	0
Office Paper	34,961
Commercial Printing Paper	0
Tissue and Towel	0
Nonpackaging Paper(junkmail)	23,535
Packaging Paper/Paperboard	32,295
Corrugated Cardboard	121,007
Glass Containers(clear)	3,223
Glass Containers(green)	1,823
Glass Containers(amber)	1,056
Misc Glass	1,660
Aluminum Containers/packaging	873
Misc Scrap Aluminum	0
Ferrous Containers	1,465
Major Appliances	0
Miscellaneous Ferrous Scrap	6,133
Plastic Containers/Packaging	8,861
Nonpackaging Plastic	10,171
Leaves	0
Yardwaste (grass and brush)	3,254
Stumps	0
Woodwaste (pallets, etc)	11,694
Foodwaste	25,830
Textiles	1,978
Leather/Rubber	0
Tires	0
Ceramics, Misc Inorganics	6,667
Miscellaneous Organics	9,111
<b>TOTALS</b>	<b>312,860</b>

### COMPOSITION OF COMMERCIAL WASTES (IN PERCENT):

WASTE NAME	1990
Newspapers	2.32
Books and Magazines	0.00
Office Paper	11.17
Commercial Printing Paper	0.00
Tissue and Towel	0.00
Nonpackaging Paper(junkmail)	7.52
Packaging Paper/Paperboard	10.32
Corrugated Cardboard	38.68
Glass Containers(clear)	1.03
Glass Containers(green)	0.58
Glass Containers(amber)	0.34
Misc Glass	0.53
Aluminum Containers/packaging	0.28
Misc Scrap Aluminum	0.00
Ferrous Containers	0.47
Major Appliances	0.00
Miscellaneous Ferrous Scrap	1.96
Plastic Containers/Packaging	2.83
Nonpackaging Plastic	3.25
Leaves	0.00
Yardwaste (grass and brush)	1.04
Stumps	0.00
Woodwaste (pallets, etc)	3.74
Foodwaste	8.26
Textiles	0.63
Leather/Rubber	0.00
Tires	0.00
Ceramics, Misc Inorganics	2.13
Miscellaneous Organics	2.91

existing conditions continue. This statement assumes that waste generation levels will remain virtually unchanged; that artificial controls or limits will not be placed on the transport of waste; and that no significant new disposal capacity will be provided in the region during the time period.

On a strictly local basis, the two existing landfills in DuPage County represent a substantial capability to handle DuPage waste quantities if limited in acceptance to this material. According to the Forest Preserve District of DuPage, the two sites had a combined total remaining capacity of 63,308,758 gate yards at the end of July 1990. On November 28, 1990 the Forest Preserve District of DuPage amended the operating contracts at the two sites. The amendments make sweeping changes in the terms of agreement for operation at the two sites. However, for consideration in Plan-1990, the key provision in the amendments is the measure in which waste receipt is addressed.

In the amendments the Forest Preserve District has guaranteed the operators a minimum annual quantity of waste but reserved "the right to limit, and shall have the sole responsibility for limiting disposal of waste [at the sites] to sources within the corporate limits of DuPage County, Illinois and from the following communities: Bartlett, Bensenville, Burr Ridge, Hanover Park, Hinsdale, Naperville, Roselle, Wayne, and Woodridge." The Forest Preserve District may permit the acceptance of waste at the sites from any other source. Clearly, the intent of the provisions is to limit use of the two sites to DuPage communities so long as the contractual minimum amount of waste required in the amendments is produced from this source. What is the effect of this type of control on the disposal of waste in DuPage County?

The effect is evident in the information presented in Table 2-6. Table 2-6 compares the theoretical waste generation quantities for DuPage County to the remaining landfill capacity. The column

"Tons/Year" subtracts landscape waste (at 13 percent of the theoretical total for this waste component) and does not include the category dirt/clay/sludge. The first boxed column shows cumulative cubic yards landfilled without including dirt/clay/sludge. The second boxed column includes a dirt/clay/sludge component factored in at 2 pounds per capita per day throughout the planning period. Both columns successfully add waste quantities on a year-to-year basis. The table assumes that the waste is allocated equally to the two sites during the time period. Although Table 2-6 assumes the imposition of control of waste receipt immediately, the effect of limiting waste receipt at the two sites is one of extending the lives of the two sites compared to the likely fill dates under previous conditions.

However, Table 2-6 also shows that simply limiting waste receipt to DuPage waste alone will not in itself satisfy the solid waste disposal needs for DuPage during the 20 year planning process. Limiting waste receipt to the agreed contractual minimum quantity (3 million cubic yards or 937,500 tons annually) as contained in the amendments would most likely provide more than 20 years of capacity but waste quantity estimates derived for DuPage County show that it generated 3,650,000 cubic yards (1,140,625 tons) in 1990. Therefore, actions to reduce the amount of waste sent by DuPage County to the two landfills must be taken to allow disposal capacity for the 20 year planning period. On the other hand, extreme reductions in the amount of waste sent by DuPage County to the two landfills could potentially place the Forest Preserve District in jeopardy of its "put or pay" agreement guaranteeing a minimum annual quantity of waste. Under this condition the Forest Preserve District will have to consider new amendments to the operating contracts if there is a desire to further extend the lives of the landfills.

Another important consideration exists in the amendments to the operating contracts related to the placement of daily cover at

TABLE 2-6

COMPARISON OF DUPAGE WASTE TO LANDFILL CAPACITY

YEAR *****	TOTAL TONS PER YEAR *****	TOTAL YARDS PER YEAR *****	CUMULATIVE YARDS *****	+ D/C/S TONS/YEAR *****	D/C/S YARDS/YEAR *****	CUMULATIVE YARDS *****
1990	992,281	2,976,842	2,976,842	285,138	855,414	3,832,256
1991	1,011,489	3,034,468	6,011,309	289,985	869,956	6,881,265
1992	1,031,012	3,093,035	9,104,344	294,832	884,497	9,988,841
1993	1,050,852	3,152,555	12,256,899	299,680	899,039	13,155,938
1994	1,071,014	3,213,042	15,469,942	304,527	913,580	16,383,522
1995	1,091,503	3,274,509	18,744,451	309,374	928,122	19,672,573
1996	1,109,860	3,329,580	22,074,031	313,285	939,856	23,013,887
1997	1,128,503	3,385,508	25,459,539	317,196	951,589	26,411,128
1998	1,147,437	3,442,310	28,901,849	321,108	963,323	29,865,172
1999	1,166,664	3,499,992	32,401,841	325,019	975,056	33,376,897
2000	1,186,191	3,558,572	35,960,413	328,930	986,790	36,947,203
2001	1,202,292	3,606,875	39,567,289	331,494	994,481	40,561,770
2002	1,218,626	3,655,878	43,223,167	334,058	1,002,174	44,225,340
2003	1,235,194	3,705,582	46,928,749	336,622	1,009,865	47,938,614
2004	1,252,001	3,756,004	50,684,753	339,186	1,017,557	51,702,310
2005	1,269,049	3,807,146	54,491,899	341,750	1,025,249	55,517,147
2006	1,289,222	3,867,667	58,359,566	345,305	1,035,914	59,395,480
2007	1,309,701	3,929,104	62,288,670	348,860	1,046,579	63,335,249
2008	1,330,489	3,991,468	66,280,139	352,415	1,057,244	67,337,383

=====  
D/C/S means Dirt/Clay/Sludge

the landfills. The use of cover (soil) material at landfills is fully described in Appendix A-4 but for explanation purposes here the reader should be aware that waste at a landfill is covered on a daily basis with "daily cover". The purposes for placing daily cover include limiting odors and vector (pest) control as well as minimizing blowing litter and the infiltration (seepage) of precipitation. State regulations require the placement of:

- a. A uniform layer of at least 0.15 meter (six inches) of clean soil material; or
- b. Alternative materials or procedures, including the removal of daily cover prior to additional waste placement, provided that the alternative materials or procedures achieve equivalent or superior performance to the requirements of a in the following areas:
  1. Prevention of blowing debris
  2. Minimization of access to the waste by vectors
  3. Minimization of the threat of fires at the open face: and
  4. Minimization of odors.

The amendments to the operating contracts allow the operators to use alternative materials for up to 40 percent of the required daily cover, subject to IEPA permit approval. This could substantially increase the amount of "airspace" for filling with waste rather than soil for daily cover. This is especially true when we considers that although the regulatory standard for daily cover is a minimum of six inches, in practical terms it usually requires an average of 12 or more inches to cover all exposed waste with a minimum of 6 inches. This potential savings in space is not reflected in Table 2-6.

As stated above, simply limiting waste disposal at Mallard Lake and Greene Valley landfills to waste generated by DuPage County will most likely not provide 20 years of capacity. However, actions to reduce, divert and recycle waste could provide sufficient capacity. The effects of these activities will be discussed in Section 3.0.

plan2

**SECTION 3.0**  
**SOLID WASTE MANAGEMENT SYSTEMS**

Sections 3.1 through 3.3 present solid waste management systems available for DuPage County. The sections represent summaries of the detailed appendices for the three phases of waste management for the County's proposed solid waste management system including Phase I - Waste Reduction And Source Separation Systems; Phase II - Materials Recovery By Waste Processing; and Phase III - Final Waste Processing And Disposal.

**3.1 PHASE I - WASTE REDUCTION, RECYCLING AND WASTE DIVERSION**

This Section summarizes Appendix A-1 WASTE REDUCTION, RECYCLING AND WASTE DIVERSION. For a more detailed discussion of the contents of this Section, the reader is directed to that appendix.

3.1.1 Waste Reduction

By virtue of its prominent position in the solid waste management hierarchy set forth in Illinois Public Act 84-1319, waste reduction must be regarded as a pivotal component of DuPage County's Solid Waste Management System. Consideration of the per capita waste generation data for the planning area confirms the necessity for a strong emphasis on a waste reduction strategy. "Waste reduction" is an umbrella term which encompasses the closely related concepts of source reduction, waste prevention, and pollution abatement<sup>1</sup>. The concept of waste reduction is generally associated with a wide range of product design, packaging, manufacturing and consumer education policies all of which are

---

<sup>1</sup>Source Reduction: A Working Definition, Council on Plastics and Packaging in the Environment, December 1989, Page 8.

intended to address relevant waste management issues in a proactive manner. This approach represents a significant departure from conventional waste management strategies which typically focus upon handling waste "at the end of the pipe", after such material has been discarded. By considering the environmental impact of a product prior to its manufacture, packaging or purchase, manufacturers and consumers can work cooperatively to reduce the volume and toxicity of the material entering the wastestream.

"Source reduction", according to U.S. Environmental Protection Agency, is "the design and manufacture of products and packaging with minimum toxic content, minimum volume of material, and/or a longer useful life"<sup>2</sup>. This definition sets source reduction apart from other forms of waste reduction by virtue of its focus upon the "front-end" activities of production and packaging of consumer goods. There are essentially two approaches to source reduction activities considered from a governmental perspective; regulatory and non-regulatory.

The underlying premise implicitly embraced by any regulatory approach to source reduction is that proactive steps must be taken by government to alter current market conditions so that there is a significant incentive for private industry to redesign products, and modify manufacturing and packaging processes. Typically a regulatory source reduction program entails mandatory product design specifications, restrictions on manufacturing processes, and/or limits upon the amount of product packaging which can be used. The applicability of such measures for a local government's waste reduction initiative is questionable because most manufacturers market products on a regional or national basis, well beyond the influence of smaller units of government.

---

<sup>2</sup>The Solid Waste Dilemma: An Agenda for Action, U.S. Environmental Protection Agency, Office of Solid Waste, September 1988, Page 2.

Consequently, the source reduction aspect of the County's proposed waste reduction program will embrace a non-regulatory approach. A non-regulatory approach to source reduction places its emphasis upon utilizing existing market forces to make waste reduction attractive from an economic perspective. The primary mechanism which the County intends to employ in order to increase local private industry's awareness of the advantages of waste minimization practices is a commercial outreach program. Commercial outreach services generally involve the provision of technical assistance intended to encourage waste reduction through the revision of product design, the procurement post-consumer waste as feedstock, and/or the modification of manufacturing and packaging processes used by private firms. The County should work in conjunction with the State of Illinois to develop and implement other, more comprehensive non-regulatory source reduction programs. These broader initiatives could include tax incentives, low interest loans, and/or grants to help off set the costs incurred by industries attempting to modify their products or manufacturing processes.

While some source reduction measures on the part of manufacturers and distributors may be easily achieved, other more intrinsic changes in product design, manufacture, and packaging may entail substantial costs. The success of a non-regulatory source reduction policy cannot be assured without a concerted effort aimed at promoting the market for waste minimizing products. The general public must utilize the free market system to prompt manufacturers to modify the design and packaging of their products in order to minimize waste. Without the presence of such consumer pressure, the willingness of manufacturers to commit the resources required to redesign products and re-tool factories is questionable.

The second aspect of the County's waste reduction program, waste prevention, will be a vigorous public education program aimed at creating just this type of consumer behavior. "Waste

prevention" is the manner in which people grant preference to those consumer goods which reflect source reduction efforts by manufacturers (e.g. designed for efficiency and durability, minimal packaging and toxicity). By raising the general public's awareness of the need to reduce waste, especially those refuse materials which can pose a threat to the environment when discarded, a program promoting waste prevention may compel the general public to purchase more environmental sound products even when this choice entails additional expense.

Waste prevention and promotion campaigns should not be limited to canvassing individual private citizens. It is important to remember that the procurement activities of private businesses will also have a significant impact upon the market for environmentally sound goods. To this end, the value of commercial outreach programs to disseminate information about procurement and other cost saving, waste minimizing practices should not be underestimated. The purchasing practices of the County and other local governments should also embrace the principals of waste prevention. Many public agencies have adopted comprehensive waste minimization policies which go well beyond simple procurement actions. Waste minimization practices can include the re-use of durable materials, avoidance of disposable products, elimination of activities which generate excess waste, and an emphasis on the efficient use of energy resources.

The third and final aspect of the County's waste reduction program will be a pollution abatement initiative. While the goal of all waste reduction efforts may be the minimization of the total volume of material entering the wastestream, pollution abatement efforts can also diminish the demands which are placed upon solid waste management systems by hazardous or other hard-to-handle waste products. One example of a pollution abatement strategy is the establishment of a deposit requirement for certain durable goods such as used beverage containers, motor oil, car batteries, and

tires. This method provides a clear economic disincentive to those people who might have decided to discard recoverable products rather than make an additional effort to divert them from the municipal wastestream.

While the effectiveness of a deposit system when implemented on a statewide level is well documented, adopting this particular approach to pollution abatement on a local government appears infeasible. To maximize its effectiveness, the County's pollution abatement efforts should be focused upon separating problematic wastes from the conventional wastestream. Once identified, designated materials should be source separated and diverted to privately owned facilities capable of reprocessing or disposing of such refuse in an environmentally sound manner. Some components of the wastestream which should be targeted include household hazardous wastes, lead/acid batteries, motor oil and used tires.

To summarize, the success of any waste reduction strategy is dependent upon the interrelated concepts of source reduction, waste prevention, and pollution abatement. It is important to re-emphasize the close interdependence of source reduction and waste prevention initiatives. Adopting a non-regulatory approach to source reduction entails implicit acceptance of the underlying premise that the free market will reward firms which embrace waste minimization policies. The public sector can (and must) facilitate source reduction by private firms through the provision of technical assistance and the development of markets for environmentally sound products. Public education campaigns, which promote waste prevention, will also stimulate markets for waste minimizing goods and encourage recycling simultaneously. Finally, an integrated waste reduction program must include a well targeted pollution abatement initiative intended to divert hard-to-handle and potentially hazardous wastes from the municipal wastestream.

### 3.1.2 Recycling

In order to accomplish waste reduction goals, recycling strategies have been developed in Plan-1990 to address the residential, commercial/industrial/institutional, public, construction/ demolition, and wastewater sludge wastes. However, since varied roles exist among the County, municipal and township governments, state and federal governments, not-for-profit organizations and private industry, coordination and cooperation will be critical to the successful implementation of a comprehensive and consistent regional recycling program.

The County has the primary responsibility of planning for the ultimate disposal of waste materials produced within the county and to oversee the implementation and operation of a comprehensive and integrated recycling system. Public Act 85-14 provides the County with the authority to regulate and control the method of disposal of solid waste generated in the county once the County Board adopts the Solid Waste Plan. The following duties of the County will assist in assuring recycling program performance:

- Administration of Chapter 30 (Solid Waste) of the County Ordinance.
- Collection and distribution of funds generated by County activities relative to solid waste.
- Ability to control the method of disposal for waste generated in the county and to set delivery standards to disposal facilities.
- Coordination and development of informational and educational activities.
- Documentation of recycling levels.

Municipal governments have the authority to control the collection of waste generated within their municipal boundaries while townships may license collection services for homes located in unincorporated areas. Responsibilities of municipal and township governments should range from the provision of curbside

collection programs, which are consistent with the County's recycling program in terms of materials collected, the provision of drop-off capabilities to enhance curbside collection programs, and public education activities designed to maximize awareness and to stress the importance of participation in recycling programs.

The State of Illinois, through the Department of Energy and Natural Resources (IDENR), the Illinois Environmental Protection Agency (IEPA), and the United States Government, through several departments, can assist in implementing the County's recycling program. The State and Federal governments may provide the County with program models and regulations in collection, hauling, processing, and marketing of recyclable materials, as well as supply aid and funding for recycling programs.

Not-for-profit organizations should continue to provide recycling opportunities for DuPage citizens. As recycling programs have become more closely affiliated with municipal programs, municipalities may assign or subcontract to a not-for-profit organization certain tasks such as the coordination of municipal MRCs and/or education programs. Independent operations, such as newspaper drop boxes and other collection points, will be encouraged for further wastestream reduction measures and local fund raising programs.

The role of private industry may extend from participation in wastestream reduction and resource recovery programs to involvement in various entrepreneurial activities, such as collection, transportation, marketing, and the use of recycling materials.

#### 3.1.2.1 Residential Sector

The residential sector has been the central focus of recycling initiatives within DuPage County. Ultimately, all single family and multi-family households in DuPage should participate in the

recycling program. In order to maximize and maintain residential participation in the recycling program, it is essential that the recycling system is convenient to use, efficient to operate, and designed with permanence and durability in mind. The chief components of the residential recycling system consist of drop-off facilities, curbside collection services, and Intermediate Processing Facilities (IPFs).

The first component of the recycling system is drop-off facilities. The primary function of drop-off facilities is to serve residents of less densely populated areas without the provision of curbside services or to provide collection capability made unavailable to curbside collection participants.

Drop-off centers can be generalized into three deferent categories as Multi-Material Recycling Centers (MRCs), Specialized Drop-off Centers, and Satellite Drop-off Centers.

MRCs are regional facilities which collect a minimum of three materials from residents and small commercial generators for limited processing and shipment to market or other large processors. Specialized Drop-off Centers are dedicated to the collection of one or two materials for recycling. Satellite Drop-off centers are small centers located at multi-family dwellings which provide for convenient recycling opportunities for residents.

The second component of the recycling system is curbside collection programs. Curbside collection should be funded as a service, just as refuse collection and disposal service is traditionally funded.

The County, as requested by the municipalities, will assist in the design of collection systems and in procedures related to the delivery of materials to the intermediate processing facility. The County's recommendations for design of curbside collection of

recyclables are as follows:

1. Collection of recyclables should take place weekly, on the same day as garbage pickup.
2. Collection should be accomplished with special curbside trucks capable of separating commingled recyclable materials from paper.
3. Each participating household should be provided with at least one large clearly marked, standardized curbside container.
4. Publicity and education is to be a joint responsibility of the County, municipalities, haulers, and other local groups.
5. Collection of at least three materials (glass, newspaper and aluminum) will be required initially, with the addition of plastics, steel cans and other materials strongly supported by the County in order to meet higher waste reduction levels.
6. Anti-scavenging ordinances or licensing of scavengers may be necessary to avoid theft of the valuable materials set out by residents for curbside recycling.
7. In order to give proper credit and to quantify the diversion of materials, routes should be defined by specific geographic areas. The hauler should report program activities to the municipality or township which will assist in identifying areas to direct promotional campaigns designed to increase participation.
8. Regular reports through the media and municipal newsletters updating residents of the success of the program should be encouraged.
9. Incentives for participation are encouraged.

Once processing facilities are available, programs for curbside recycling may expand and become more stable. Through economies of scale, the processing facilities will be capable of supporting the large influx of residential materials collected through curbside programs, while simultaneously developing a competitive edge in the materials markets. The flexibility within the County IPFs will support the collection of the following materials:

Initial Target Materials:

1. Paper
  - Newspaper
  - Kraft Paper (corrugated and brown paper bags)
  - Mixed Paper (magazines and other papers)
2. Commingled Containers
  - Glass
  - Steel and Bi-metal Cans
  - Aluminum
  - Plastics (HDPE and PET)

Possible Future Target Materials:

1. Plastics
  - Polystyrene
  - Polyvinyl Chloride
  - Polypropylene
  - Low Density Polyethylene
  - Other (new plastics and plastic films)
2. Household Batteries
3. Used Motor Oil

Curbside collection within DuPage County should be directed towards commingled collection systems to enhance the ease and convenience of residents. In this system, residents and the haulers will only be responsible for separating paper from non-paper materials. Further separation of materials will occur at the processing facilities. The collection vehicles will not accept "garbage" or non-recyclables and questionable bins will be rejected. In an environment such as DuPage County where multiple units of government and haulers exist, a commingled system is generally more efficient and less costly to operate because the commingled collection process requires less separation, less time, and less complicated equipment than the truck-side sorting process.

In order to ease the transition of the collection of recyclable materials, the County will supply requesting units with

standard containers for curbside collection programs within DuPage County. The containers were selected to accommodate the current truck-side sort systems as well as the future commingled systems that the IPF would afford.

The third component of the recycling system is the Intermediate Processing Facilities (IPFs). The IPFs, acting as the intermediate step between the collectors of recyclable materials and the markets for these materials, will be the core of the recycling system for the County. Materials must be collected in quantity, sorted by type and processed into marketable quantities before they are acceptable to the marketplace. Sorting and processing are the primary functions of the IPFs, as well as expediting collection methods by providing convenient sites to handle commingled recyclables and small clean loads of recyclables.

Under consideration of anticipated processing needs, geographic generation, travel times and collection efficiencies concerning the provision of intermediate processing facilities, the Solid Waste Management Recycling Plan concluded that a definite need exists for the provision of at least two IPFs in the county, preferably a northern and southern facility. The first IPF, positioned in the north-central portion of the county, is currently under construction. The site is located in Carol Stream, on Fullerton Avenue between Gary Avenue and Schmale Road. The project development plan for the second proposed IPF, with suggested placement in the southern portion of the county, is under development. Points of consideration to determine the start of construction for the second IPF shall include the availability of funding for this facility and a demonstration of need based on 85 percent loading of the first facility.

The materials transported to the IPFs will be predominately generated through municipal curbside collection programs. However, the IPFs may be able to process and/or co-market materials

collected at the various drop-off facilities. Although the IPFs are geared primarily toward residentially generated recyclables, a small amount (maximum 15 percent of capacity) of low grade materials may be accepted from small commercial generators.

The intent of the County is to assure availability of the IPFs to the local collection programs and maximize the return of available revenues back to local governments or residents through the haulers. The IPFs should be in a favorable market position compared to other area recycling operations due to the quantity of material that the IPFs will produce on a daily basis and the degree to which the materials will be processed, both features being highly desirable to markets. However, should market conditions erode to the point where a negative cash flow is apparent, the County intends to use other funding mechanisms, such as landfill surcharge funds or other solid waste disposal fees, to bolster funds available for IPF operation in order to avoid the implementation of a tipping fee at the IPFs.

#### 3.1.2.2 Commercial/Industrial/Institutional Sector

In the commercial/institutional/industrial sector, various entrepreneurial possibilities have developed for private business including collection, transportation, marketing, and use of recyclable materials. Additionally, significant materials recovery opportunities exist within this sector. Private firms are strongly urged to increase waste reduction and recycling as a means to reduce the total wastestream.

Although a hands-on governmental role resembling the approach within the residential sector will not be attempted at this time within the commercial/industrial/institutional sector, the County will develop incentives to encourage recycling and other diversionary solid waste activities within this sector. Although participation is voluntary, private firms may conduct recycling

activities to take advantage of economic benefits, to fulfill employee expectations, and to preserve its image as corporate citizen.

The County will provide recommendations and perform in an advisory position to develop recycling systems within the commercial/industrial/institutional sector. The following list summarizes the key components recommended for private business in the context of waste reduction and recycling:

1. Control Waste Sources. Source reduction may be practiced by promoting increased product longevity, reuse, repair and remanufacture; minimizing the amount of material used in the design, production and marketing of items; reducing or eliminating unnecessary packaging of items; and promoting the development of less toxic or non-toxic alternatives.
2. Increase In-House Recycling of Materials. Diversion of recoverable materials, such as office and corrugated paper, glass or aluminum, from the wastestream may be accomplished by utilizing the services of scrap dealers and commercial recyclers.
3. Procure Recycled Post-Consumer Products. Market support for products made of recycled materials may be cultivated by purchasing products containing recycled paper, plastic, or other recoverable resources.
4. Educate Consumers. Communication with consumers may be conducted through public information campaigns and school education programs to inform consumers about waste reduction; in-store shopper awareness campaigns to inform consumers of the availability and advantages of products designed to minimize solid waste; and positive labels which identify recycled or least packaged products.
5. Research and Development. Needs exist within the marketplace for technologically advanced waste reduction equipment and facilities and improved collection and processing methodologies. Investment and creativity are critical to the progress of this quickly developing industry.

A commercial/industrial/institutional Outreach Program has been established at the County to promote recycling at private firms in DuPage. This program provides information on how to

implement in-house recycling programs and attempts to match recyclable waste generators with those private firms that can make use of these materials. Increased communication and interaction between the County and private firms will be pursued to promote and enhance cooperative relationships.

### 3.1.2.3 Public Sector

Governmental units in the county are encouraged to develop and implement recycling and other preferred solid waste practices within the scope of their activities. Such activities should be designed to reduce the wastestream of governmental facilities, as well as to serve as models for the business community. The following list summarizes the key components recommended for the public sector to pursue in order to promote recycling and waste reduction:

1. Control In-House Waste Sources. The volume of the wastestream may be minimized by promoting and purchasing longer lasting, reusable, remanufacturable, and repairable items, and products with minimal packaging.
2. Increase In-House Recycling of Materials. Diversion of recoverable materials, such as office and corrugated paper, glass or aluminum, from the wastestream may be accomplished by developing systems which utilize the services of scrap dealers and commercial recyclers.
3. Procure Recycled Post-Consumer Products. In order to close the recycling loop, recycled materials need to be purchased and used by governmental agencies. Procurement of products containing high percentages of post-consumer paper, plastic, or other recoverable resources is preferred.

A County designed in-house recycling program has been in place for two years throughout the County's administration buildings. This program collects mixed colored ledger, file stock computer printout paper, aluminum containers and glass containers. During 1990, the program diverted 70.3 tons of paper and approximately 2.5 tons of glass and aluminum.

The DuPage County Purchasing Department and the Department of Environmental Concerns have spearheaded efforts to purchase products made from recycled materials with an emphasis on high post-consumer content in raw materials. Writing and copier papers as well as recycled plastics have been purchased in quantity by the County.

#### 3.1.2.4 Construction/Demolition Waste

Construction/Demolition waste originates from all of the above sectors and accounts for nearly 29 percent of the total wastestream in DuPage. The Construction/Demolition component of the Wastestream consists of wood, concrete, bricks, shingles, asphalt and other miscellaneous materials. Recycling opportunities are available for construction/demolition waste in the private sector at this time, especially for concrete and asphalt. The encouragement and expansion of such activities is encouraged.

For the most part, recovery of construction/demolition debris as practiced in other areas of the country consists of the recovery of aggregate material. In some cases wood products and other miscellaneous items can be recovered.

It is recommended that a minimum reduction of 15 percent in three years and 25 percent within five years should be strived for in this waste component. The active involvement of the Forest Preserve in limiting the materials to be accepted at its landfill sites in the near-term should help facilitate this goal. Methods to achieve the goals for reduction include the following actions listed in ascending order of anticipated cost for implementation:

1. Non-acceptance of uncontaminated soil/clay at the disposal site unless used for cover operations or grading;
2. Limitation of asphaltic aggregate and concrete/brick materials and the encouragement of recycling/reuse;

3. Diversion of wood products and similar products for alternative use; and
4. Separation of mixed aggregate materials by size and classification for re-use.

#### 3.1.2.5 Dirt/Clay/Wastewater Sludge

Section 4.0 of Appendix A-1 provides information estimating that this component of the wastestream arriving at the existing landfills constitutes approximately 2 pounds per capita per day. The category is recorded by the Forest Preserve District and the operators of the landfills. In the category, sludge represents a recyclable/recoverable material. Likewise, dirt and clay may be used for cover material or grading purposes at the landfills or at other sites. Efforts should be made to segregate both materials and divert them to more appropriate disposal mechanisms.

Municipal wastewater sludge can be recycled by methods including land application and composting. It is recommended that steps be taken to prohibit the landfilling of sludge in the county by 1997. This time interval should allow for system implementation and possible construction of alternative facilities. The interval assumes five years for planning and design and two years for implementation.

#### 3.1.3 Landscape Waste

The manner in which DuPage County will manage the landscape waste discarded within its borders has been dictated to a significant degree by Illinois Public Act 85-1430. With the implementation of this important legislation on July 1, 1990, Illinois became the first state in the nation to enact a comprehensive ban on the landfill disposal of landscape waste. The landscape waste component of the wastestream, according to the Illinois Environmental Protection Act (Chapter 111 1/2 of Illinois Revised Statutes), includes: "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." Illinois Public 85-1430 mandates the source separation of these materials from the rest of the wastestream destined for landfill disposal. This directive has prompted the establishment of diversion and alternative disposal capability for landscape waste by local governments and the private sector in DuPage County.

In order to achieve a clearer impression of the amount of landscape waste which is generated in the planning area on an annual basis, the estimated per household landscape waste generation rates which were set forth in the Illinois Department of Energy and Natural Resources' Management Strategies for Landscape Waste (July 1990) can be applied to DuPage County. Based on IDENR's figures, 145,113 tons (851,448 cubic yards) of landscape waste will be generated in DuPage County during 1990 (12.7 percent of the total wastestream). Comparison of this estimate to waste generation data developed in Appendix A-1 indicates that landscape waste represents approximately 13 percent of the total wastestream for DuPage. Further calculation indicates that landscape waste accounts for approximately 29 percent of the residential component of the total wastestream and approximately 18 percent of the combined residential and commercial/institutional/industrial components of the total wastestream.

The successful implementation of Public Act 85-1430 will involve three interrelated components. First, establishment of a separate collection system for the diverted wastestream will be necessary. Second, alternative disposal capability for the landscape waste generated in the planning area must be provided. Third, the development of an intensive public education campaign aimed at informing homeowners about: 1) the need to separate landscape waste from other household refuse, 2) waste reduction and composting techniques, and 3) alternative collection and disposal systems is required. Since the implementation of the landscape

waste ban in July 1990, all three of these components have been established in the communities located within the planning area. Meeting these criteria on a continuing basis will require a coordinated effort on the part of all units of local government and private sector firms specializing in solid waste management. The Solid Waste Division of DuPage County Department of Environmental Concerns will attempt to assure that these integral components are present in order to facilitate sustained compliance with this important State legislation.

#### 3.1.3.1 Separate Collection

The provision of separate collection of landscape waste has been achieved through the combined efforts of municipalities which have negotiated hauling contracts behalf of their residents and waste collection firms working independently in the remaining areas throughout the County. Separate collection of landscape waste does not represent an undue hardship for waste haulers or homeowners. The characteristics of the targeted wastestream allows haulers to utilized standard waste collection equipment. While some firms may be required to procure additional trucks, the suitability of conventional packer vehicles for the required task will minimize the additional capital expense and risk assumed by private waste haulers.

Because landscape waste is usually accumulated separately, compliance by homeowners simply entails not commingling landscape waste with other household waste and conforming with the material preparation guidelines set forth by their hauler. The additional costs of the separate collection of landscape waste incurred by hauling firms has been passed on to homeowners in one of two ways. In most instances, municipalities have established landscape waste collection contracts which charge for this service on a per unit (per bag or container) basis. This approach compels residents to buy specially designated bags or stickers for use with generic bags

at local retail outlets, the purchase price including the cost of collection and disposal. The alternative approach involves an increase of the collection fees paid by all residents on a monthly or quarterly basis to reflect the added cost of landscape waste collection.

From a municipal perspective, issues related to collection of landscape waste which will have to be addressed each time contractual arrangements for landscape waste collection are made include:

1. Cost/equity of billing system;
2. Ease of participation for homeowners;
4. Efficiency of containers and collection equipment; and
5. Impact upon the processibility of waste.

These aspects of landscape waste collection systems can be complimentary to some degree, but there will also be trade-offs which must be made by local officials. In this regard, the multitude of hauling and billing approaches being employed within the county should be regarded as competing pilot collection programs. The results of these small scale experiments will eventually generate a data base which will delineate the efficiencies and trade-offs entailed by each distinct approach. The collection and dissemination of this information would appear to be a task that the County should assume in order to assure reliable and cost efficient landscape waste collection service. Therefore, the County will endeavor to act as a clearinghouse for information on collection programs. The County's role in assuring the provision of adequate collection services in the incorporated areas will involve providing access to information regarding the success of the various collection approaches to municipal decision-makers. Once this information becomes available, the ability of local officials to make prudent decisions regarding collection procedures will be greatly enhanced.

### 3.1.3.2 Disposal Facilities

It is crucial that an effort be made to assure that the continued availability of adequate processing capacity exists for source separated landscape waste. Failure to provide homeowners with an option involving collection and remote disposal will inevitably lead to an increase in burning, illegal dumping, and concealment of landscape waste within the remaining portion of the municipal wastestream. The responsibility for developing alternative disposal capability, the second component of the County's landscape waste management system, has been shared DuPage County, the City of Naperville, one major hauling firm, and private landfill operators. Each one of the existing landscape waste management facilities represents a distinct combination of governmental entities and private firms.

The reprocessing technologies utilized by the facilities accepting landscape waste from DuPage County fall into two basic categories: land application and windrow composting. Land application is the spreading of landscape waste on farmland at an acceptable agronomic rate. The primary advantages of land application are that the process is "low tech", inexpensive, and does not require a state permit. Some of the drawbacks associated with land application include questions regarding what constitutes an "agronomic rate", the concern over the impact of residual metals or pesticides on farm land, and the large tracts of farmland required. Windrow composting, on the other hand, involves the placement of organic yard waste in elongated piles (windrows) which are monitored to assure optimum temperature and moisture conditions for rapid aerobic decomposition. The windrows are turned periodically to provide adequate aeration. The primary advantages of this processing technology include its proven track record and that a composting site will have a sustainable processing capacity. The drawbacks to windrow composting include siting and permitting considerations, and the need for specialized equipment.

Only one known landscape waste management facilities which are serving the planning area at this time depends solely upon land application technology. The remaining sites are windrow composting facilities which have utilized varying levels of land application activity to supplement their processing capacity or for research purposes. Because all of these facilities have experienced operational difficulties managing the relatively small amount of landscape waste discarded during the first few months of the diversion effort, there is reason to doubt the long-term adequacy of the existing processing capacity. The inability of the existing sites to manage the volume of landscape waste generated during this first full season of the diversion effort should not necessarily be construed as evidence that additional facilities need to be developed. The actual capacity of the current processing sites will not be realized until sometime in 1991 after they are fully developed, endure an extended shakedown period and refine their operations.

One fact that has become clear during the initial months after the implementation of Illinois Public Act 85-1430 is that the provision of adequate disposal capacity will require the continued collaboration of various entities within both the public and private sectors. The continued involvement of the County in the provision of landscape waste disposal capacity appears relatively certain when one considers the nature of processing operations and the demographics of the planning area. Both windrow composting and land application operations require a significant amount of land. This requirement, as well as the need for specialized machinery and adequate technical expertise, will probably prohibit the establishment of disposal capability by most individual municipalities. Consequently, there will be a need for regional processing sites to accept this portion of the wastestream. While smaller scale sites located throughout the County representing joint efforts on the part of 2 or 3 municipalities would be advantageous, the siting and development of such facilities can be

expected to become increasingly more difficult as economic development activities in the region use available open land. It follows that the establishment of larger scale sites in areas where such processing activity is consistent with land use in the surrounding region will be an option which will have to be considered.

After adoption of a solid waste plan, the County is authorized to regulate the method of final disposal of refuse, including landscape waste. The provision of large scale landscape waste processing/disposal capability may be required by the County. Such a scenario would be the result of a failure on the part of the private sector to provide sufficient processing capacity for an inordinate amount of the diverted landscape waste. Because the provision of such facilities is capital intensive, the need for the County to recoup its investment might entail assurances of the delivery of sufficient volumes. The initiation of flow control over the landscape waste generated in DuPage County would be one method which might be utilized to recover the funds required to establish sufficient processing capacity.

#### 3.1.3.3 Education And Information Programs

The responsibility for the public education programs, the third component of the landscape diversion system, has been shared to some degree by the County, townships, municipalities, and the waste hauling firms operating within the County. The County's educational campaign reflects the hierarchy of landscape waste management alternatives advanced in the Landscape Waste Management Feasibility Report (August 1989). The prescribed alternatives for landscape waste diversion are as follows, in descending order of desirability:

1. Residents should be encouraged to leave grass clippings on their lawn instead of collecting them for off-site disposal;

2. If residents do collect their landscape waste they should be encouraged to use the raw material as a mulch in the garden or around shrubbery;
3. If the yard waste cannot be used in its raw state, homeowners should be encouraged to construct a backyard compost pile; and
4. The last and least desirable option is the separate collection and transportation of landscape waste to regional composting facilities.

The County has actively promoted an I.M.B.Y., or "in my backyard", approach to landscape waste management in order to reduce the demands placed upon alternative collection and disposal systems. This theme has been incorporated into brochures published by the County and offered to municipalities, businesses, and local community groups. Many municipalities have launched public information campaigns which embrace these central themes but have been tailored to meet the specialized needs of their residents. These local initiatives typically included information regarding landscape waste collection services offered by the private waste hauler(s) serving the municipality.

The need to continue public information efforts addressing landscape waste disposal alternatives should be readily apparent. Cooperative efforts on the part of the State, County, municipalities, and local haulers should be utilized to promote landscape waste reduction, composting, and acceptable disposal practices among homeowners. A failure to do so will inevitably lead to an increase in open burning, illegal dumping, and operational problems for collection and disposal operations related to improperly prepared materials.

In summary, the effective implementation of Illinois Public Act 85-1430 on an on-going basis will depend upon continued cooperation among various governmental units, landfill operators, private waste haulers, and homeowners. These groups must assure

that alternative collection and processing systems for landscape waste are in place, and that the public is informed of their options for managing this component of the wastestream. The success of this integrated approach will depend upon coordination, monitoring and system evaluation efforts on the part of the County.

By assuming the lead role in monitoring landscape waste management activities, the County may be able to identify and correct shortfalls in the diversion system in a proactive manner. This central oversight capability will be particularly vital if the current, decentralized system for landscape waste collection persists. By tracking the landscape waste collected in the planning area, the County may be able to anticipate potential shortages of processing capacity. Beyond facilitating simple compliance with the prohibition of landscape waste at the landfills, monitoring and evaluation efforts could be used to improve the overall efficiency of the diversion effort.

#### 3.1.4 Funding

The entire waste reduction, recycling and landscape waste system is dependent on sustainable sources of revenue and an effective system for the utilization of those funds. The development of an integrated solid waste system that maximizes these reduction techniques will require substantial financial commitment from all levels of government and private industry.

##### 3.1.4.1 Capital Costs

The development of the recycling system calls for the construction of several new facilities and the capital improvements on several more. The largest capital expense will be the development of the two Intermediate Processing Facilities. The capital cost for the first IPF is just under 9 million dollars. Construction of new MRCs and improvements on existing centers will

require approximately \$300,000 - \$750,000 over the next two to four years.

The County's commitment for curbside recycling containers for 1991 is approximately \$320,000 during 1991.

#### 3.1.4.2 Operational Costs

The Solid Waste Planning Committee has discussed providing operational assistance to MRCs by offering a credit for each ton collected and shipped. The intent for such a program is to help support the MRCs which are viewed as integral components of the County's recycling system.

In late 1990 the DuPage Solid Waste Planning Committee authorized the initiation of a pilot program for such funding assistance. The pilot program has been proposed for a period of six months with a budget of \$62,500. The pilot program will provide information on the actual assistance needs for the MRCs. The need for future funding can then be assessed by the County.

#### 3.1.4.3 Revenues

The current landfill tipping fee surcharge applied to waste landfilled in DuPage County is the primary and most reliable source of funding for solid waste activities, including recycling. The solid waste landfilling surcharge has been very effective in providing funds for the County's solid waste program. However, historic revenue levels can be expected to change as a result of the amendments to the landfill operating contracts as approved by the Forest Preserve on November 28, 1990. For a full discussion of funding, refer to Section 6.3.

Grant money from outside sources, such as the Illinois Department of Energy and Natural Resources Recycling Grants

Program, can offer an occasional capital boost for recycling programs, they cannot be relied upon for on going operations.

Net recovery from the sale of materials from the Intermediate Processing Facilities holds great promise for municipal curbside recycling programs. The County's proposed program calls for all net revenues (minus the costs for operation and host-community benefits) from the facility to be returned to the haulers delivering materials to the IPF and then to the residents served by those haulers. In order to help increase net revenues, the County has determined not to use materials sale revenues to defray the capital costs for the facilities' construction. No net revenues are proposed to be retained by the County.

#### 3.1.5 Findings

The waste reduction, recycling and waste diversion program proposed in the County's comprehensive solid waste management system will allow it to meet and surpass the goals required for waste reduction as outlined in Public Act 85-1198. A description of the waste reduction, recycling and waste diversion program is summarized in Section 5.0 which includes a tabular summary of reduction levels showing that the proposed program will surpass State goals. The proposed system is expected to reduce the total wastestream by 33 percent. The County has prioritized the implementation of the aspect of its solid waste management system by interim approval of its Recycling Plan in order to allow the implementation of activities. This prioritization and concentration on reduction of the total waste quantity requiring additional processing and disposal will continue in the future with the implementation of even more aggressive steps to provide this function.

### 3.2 PHASE II - MATERIALS RECOVERY BY WASTE PROCESSING

This Section summarizes Appendix A-3 MATERIALS RECOVERY BY WASTE PROCESSING. For a more detailed discussion of the contents of this Section, the reader is directed to that appendix.

#### 3.2.1 Processing Objectives

Phase I of the proposed solid waste management system for the County provides for reducing, recycling and otherwise diverting materials which can be recovered from the total wastestream by source separation efforts or preceding source separation efforts in the case of waste reduction actions. Although the implementation of the system described in Phase I will have a substantial impact on reducing the amount of waste requiring final disposal, further reduction in the wastestream will be possible and can be afforded by the implementation of a post-consumer mixed waste processing system. There are several reasons for this including:

1. Not all individuals will participate in the separation of materials at the source;
2. Even those individuals that participate in source separation programs regularly will not recycle all materials that are recyclable 100 percent of the time;
3. The coordinated and convenient service to multi-family dwellings in the county is not and will not be at the same level as that for single-family dwellings in the near future and the recovery rate from this faction of waste generators can be expected to be lower with significant quantities of recoverable material remaining in this component of the wastestream; and
4. The relative recovery rate from the commercial, industrial and institutional faction of waste generators can fairly be expected to lag in implementation with significant quantities of recoverable materials remaining in this component of the wastestream.

The advantages for the implementation of materials recovery processes which target the additional recovery of materials from

the mixed wastestream are evident when viewed as supportive to Phase I efforts. When discussing materials recovery it is important to focus on the processing objectives or goals for the process to achieve rather than on the specific technology or equipment that will be utilized. Clear advantages exist for the provision of flexibility in the materials recovery system until the long-term final disposal system is well defined. The common objectives that should be sought when considering a materials recovery system include:

1. The recovery of recyclable materials;
2. The removal of undesirable components;
3. Improving the quality of the waste as a feedstock for subsequent processes; and
4. Reducing the volume of material to be transported, processed or disposed.

### 3.2.2 Materials Recovery Alternatives

The three general categories of post-collection materials recovery alternatives include post-collection dump and pick; mechanically-assisted hand separation; and mechanical separation processes. All of these systems concentrate on sorting waste after it has been collected.

#### 3.2.2.1 Dump And Pick

Dump and pick operations represent the simplest approach to post-collection processing. In this operation mixed solid waste is brought to a receiving area where it is dumped on a tipping floor. The waste is then inspected and materials targeted for recovery are removed. Dump and pick operations are especially common at transfer stations which handle waste generated from the commercial sector. At these facilities it is common to remove corrugated containers and office paper. These materials are often in a clean state when delivered from a commercial collection route.

Contaminated material is bypassed to the disposal facility.

An advantage to dump and pick operations is their minimal cost for construction when incorporated into a transfer facility operation. Their chief disadvantage is that they are not well suited to consistently separate large amounts of material and work best on relatively clean loads.

#### 3.2.2.2 Mechanically-Assisted Hand Separation

The efficiency of dump and pick operations can be improved by the addition of mechanical systems to aid in the separation by hand. These systems commonly employ a series of conveyors which carry the waste past workers at picking stations. The waste that is not picked off of the conveyor is transported to the end of the line where it is sent to the disposal facility. The efficiency of this type of system is determined by the quantity and type of materials targeted for recovery and the number of picking stations provided. Although manual sorting systems can theoretically achieve a very high degree of quality control, the economics of throughput and staffing levels must also be considered. The total number of workers, the configuration of the picking stations, the speed of the conveyor and the depth of material on the conveyor are just a few of the factors which will impact the efficiency of the system and the costs for construction and operation.

An advantage to such systems is their ability to be installed at virtually any type of waste management facility. They also provide a greater degree of efficiency than dump and pick operations thereby allowing for higher throughput.

#### 3.2.2.3 Mechanical Processes

More advanced mechanical processes employ increased levels of automatic materials separation. They may continue to use hand

picking in their design depending on the materials targeted for recovery. Common unit processes include size reduction; classification by density or size; and automated recovery of ferrous and aluminum metals. Processing equipment which provides these functions is described as follows.

1. Size Reduction: A reduction in the size of municipal waste can be achieved through the application of one or more shredding units. The use of shredders in waste processing systems generally falls into one of three categories:
  - Primary shredding to reduce bulk density, to open bags, and to improve the efficiency of subsequent size separation systems;
  - Secondary shredding for size control and improved materials handling; and
  - Tertiary shredding to improve ferrous and aluminum density and marketability.

There are four types of shredders in common use including flail mill, rotary shear, horizontal hammermill and vertical hammermill. Each differs in the way they cut or break the refuse. Flail mills are used as primary shredding units which use various types of high speed impactors to beat the refuse against a flat surface or second rotor and thereby crush the refuse. Rotary shears are low speed units which slice, tear, or twist material into smaller units. Hammermills use a hammer unit to beat, hammer, cut and shred the refuse by the shearing action of the hammers.

2. Waste Classification: Several methods are available for the mechanical classification of waste.
  - Rotating Screens Or Trommels: A trommel is a cylindrical screen that rotates around an axis. This process separates the wastes through particle size differentiation. Small materials fall through the screen openings while larger materials are conveyed through the trommel. The rotation of the trommel helps mix and tumble the waste so that separation efficiencies are high. Trommels can be used to remove dust, grit and glass particles.
  - Vibrating Screens: Vibrating screens operate in a manner similar to trommels but consist of one or

more screens oriented at the same angle and stacked vertically with different mesh openings. Vibrating screens provide good separation in the smaller particle size ranges and are cheaper than trommels but they have lower throughput capacities. They also have lower removal efficiencies where materials tend to stick together and block screen openings.

- Air Classification: Air classification equipment can be used to separate the wastestream into fractions based on properties of the waste other than size alone. Shredded solid waste is introduced into an air stream and the lightweight materials, predominately composed of paper, plastics and cardboard are carried in the air stream while the heavier materials drop. The light materials are then removed by the use of a cyclone separator or settling chamber. Air classifiers can have high maintenance requirements due to the abrasion of materials. Air classifiers are commonly used in the preparation of fluff refuse-derived fuel.
3. Automated Metals Recovery: There are two processes for the automated separation of metals.
- Magnetic Separation: The magnetic properties of iron and steel make ferrous recovery one of the easiest materials recovery processes. Magnetic separators work by passing shredded waste by a magnet which picks up the ferrous materials and separates them from the rest of the waste. Three basic types of electromagnets are used for this purpose including drum magnets, single magnet belt separators and multiple magnet belt separators.
  - Electroseparation: These processes employ electromagnetic properties and use non-ferrous metal conductivity to separate metals for waste. The waste is moved through an electromagnetic field which deflects metals out of the waste. The process has been successfully used for the separation of aluminum and separators used for this purpose are commonly referred to as eddy-current separators. These processes work most effectively on wastestreams which have been preprocessed to a considerable degree in order for the materials to be easily deflected.

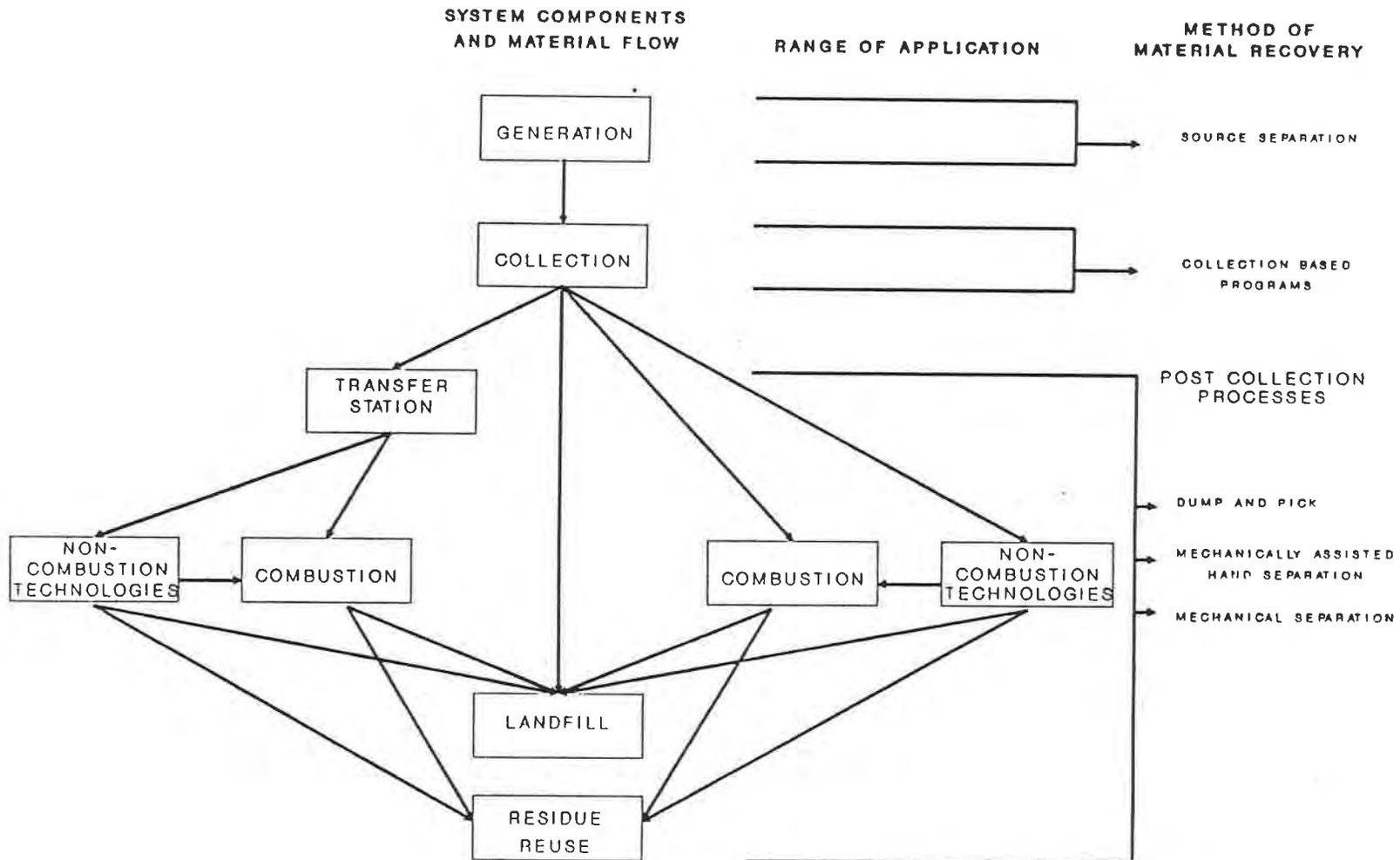
### 3.2.3 System Applications

The processes discussed in the preceding subsection can be applied in various combinations and in conjunction with different solid waste management processes. The specific configuration of a materials recovery facility will depend on the overall program goals and objectives; the degree of materials separation sought; availability of markets for recovered materials; required material quality; and other components of the solid waste management system. Figure 3-1 depicts the conceptual flow of materials for programs employing materials recovery at the point of generation and collection (Phase I activities in the County's proposed solid waste management system) and after collection. Post-collection materials recovery processes can precede any number of subsequent processing and disposal alternatives (Phase III activities in the County's proposed solid waste management system) including both combustion and non-combustion technologies as well as landfilling.

One of the most common applications of post-collection materials recovery processes is at waste transfer stations. Transfer stations, by design, serve an intermediate processing function for waste. Most transfer stations accept waste, reduce its volume through compaction, and then direct it to a landfill or some other processing facility. Materials recovery systems benefit in this volume reduction function as well as possibly having an economic benefit in the sale of recovered materials.

In addition to being located at transfer stations, material recovery processes are being increasingly applied at combustion facilities. These processes can be applied both before and after combustion. Post-combustion recovery systems generally target ferrous materials. Pre-combustion processes may target any number of materials. Refuse-derived fuel processing facilities are essentially materials recovery facilities. In the same vein, the advantages for post-collection materials recovery processes

FIGURE 3-1  
**MATERIAL RECOVERY SYSTEM ALTERNATIVES**  
 MATERIAL FLOW AND RANGE OF APPLICATION



discussed above exist for other disposal options. Some, such as composting of municipal solid waste, demand such processes. Even a system whose subsequent step is landfilling can benefit from the provision of post-collection processing.

#### 3.2.4 Environmental And Siting Considerations

All materials recovery facilities represent a system to collect and process what are generally regarded as waste constituents. They all have associated environmental impacts some of which may be negative on a local basis but, on a broader basis, representing a positive impact on the environment.

One of the particular environmental concerns to be considered at a materials recovery facility is the management of residue. Where actions are taken to remove hazardous waste materials from the mixed wastestream, this management of residue will require careful consideration. The planning for such facilities must consider the ramifications of intermediate storage, transportation and final disposal of these residue products.

A mixed municipal waste processing facility can generally be classified as an industrial activity. It generates truck traffic; can potentially be a source of noise, fugitive dust and odors; and can cause visual impacts to the surrounding area. Measures can be taken to reduce these impacts including controlling the length of time which putrescible waste or separated contaminants are allowed to remain in the facility both before and after processing; requiring the application of appropriate dust control measures such as the installation of filters in buildings; and reducing traffic-generated dust by providing paved areas for access. Noise and aesthetic concerns can be addressed through the appropriate design of buildings and site landscaping features.

Despite the control measures which can be taken, it is

practically impossible to avoid all potential impacts to the environment. For this reason, a facility is most appropriately placed in an area classified for industrial or specific solid waste use, or which is otherwise appropriately buffered from nearby incompatible land use. Reviewing surrounding land use as an evaluation criterion provides an indirect mechanism for considering other siting issues such as noise, aesthetics, and other environmental impacts. Other criteria which should be evaluated during site selection include:

1. Land Requirements And Availability. A centralized processing facility for DuPage County as discussed here could be expected to require a parcel of land in the range of 5 to 25 acres depending on the facility's specific requirements and its compatibility with neighboring properties.
2. Transportation And Market Accessibility. The surrounding traffic flow should be considered from both the standpoint of traffic impacts and availability of access.
3. Proximity To Utilities. The availability of required utilities should be evaluated.
4. Site Subsurface Conditions. The conditions of underlying soils, depth of bedrock, and depth of water table should be evaluated in terms of potential impacts on construction.

Materials recovery facilities which receive mixed municipal waste would currently be classified as Regional Pollution Control Facilities in Illinois and subject to the local siting approval process.

#### 3.2.5 Costs

The cost of a materials recovery facility will vary greatly with the type of process involved. Project specific factors such as the specific type and quality of the equipment used; size and type of buildings involved; site purchase and development costs; and ownership and financing mechanisms will all affect the capital cost for the facility. The capital cost of the facility, the

operating cost of the facility and the residue disposal costs together constitute the expenses for a facility. Revenues from the sale of materials may help to offset these costs but will not eliminate them. The final total for costs at the facility constitute the tipping fee charged at the facility.

A survey of selected mixed waste processing facilities in the U.S. indicates capital construction costs varying widely with a range from a low of \$5,000 per installed daily ton of processing capacity to a high of nearly \$73,000. A realistic estimate for the types of facilities generally proposed for use in DuPage County's solid waste management system could be \$30,000 to \$50,000 per installed daily ton of processing capacity based on the information culled from existing facilities elsewhere in the country. This does not include costs for land.

Operating costs are impossible to estimate without clearer definition of a specific project but a survey of operating costs at the same selected facilities operating in the U.S. indicates operating fees ranging from a low of \$5 to a high of \$51.21 per ton although this information is very limited.

#### 3.2.6 Findings

Although the implementation of Phase I of the County's solid waste management system will have a substantial impact on reducing the amount of waste requiring final disposal, further reduction in the wastestream will be possible and can be afforded by the implementation of a post-consumer mixed waste processing or "materials recovery" system. There are several reasons for this including:

1. Not all individuals will participate in the separation of materials at the source;
2. Even those individuals that participate in source separation programs regularly will not recycle all

materials that are recyclable 100 percent of the time;

3. The coordinated and convenient service to multi-family dwellings in the county is not and will not be at the same level as that for single-family dwellings in the near future and the recovery rate from this faction of waste generators can be expected to be lower with significant quantities of recoverable material remaining in this component of the wastestream;
4. The relative recovery rate from the commercial, industrial and institutional faction of waste generators can fairly be expected to lag in implementation with significant quantities of recoverable materials remaining in this component of the wastestream.

The advantages for the implementation of materials recovery processes which target the additional recovery of materials from the mixed wastestream are evident when viewed as supportive to Phase I efforts. Plan-1990 presents information documenting the use of mixed waste processing systems in this setting. The approach is technically viable with projects capable of delivering increased materials recovery even after the implementation of source separation programs.

The implementation of a project providing materials recovery by waste processing is dependent upon the final disposal option(s) selected by the County. However, the provision of materials recovery can proceed in a phased manner in order to provide the processing capability which meets the goals of materials recovery as discussed in Plan-1990. The key consideration is flexibility. The facility must be sufficiently flexible in design to respond to changes in the markets for recovered materials as well as changes in the requirements for processing prior to disposal.

### 3.3 FINAL WASTE PROCESSING/DISPOSAL OPTIONS

This Section summarizes Appendix A-4 FINAL WASTE PROCESSING/DISPOSAL OPTIONS. For a more detailed discussion of the contents of this Section, the reader is directed to that appendix.

### 3.3.1 Waste Transfer Options

#### 3.3.1.1 Waste Transfer Objectives

Waste transfer is the process in which collection vehicles unload their waste at a facility which combines the waste into a larger load for more efficient transport. Several smaller vehicles are consolidated into larger vehicles which are better suited for long-distance hauls than are collection vehicles. The larger vehicles then haul the wastes to the disposal site.

There are several benefits for transfer stations. First, transfer stations can decrease disposal costs by implementing recycling (processing) operations at the facility in order to reduce the amount of waste being sent to the disposal site. Second, transfer can reduce the hauling costs to distant disposal sites. Other benefits include:

- Reduction in collection vehicle maintenance;
- Flexibility in use of multiple disposal sites; and
- Improved productivity of collection vehicles.

#### 3.3.1.2 Overview of Systems

### TRANSFER TECHNOLOGIES

Several types of transfer technologies are available including stationary compactors; open-top trailers; balers; and other technologies. Similarly, there are several types of transport systems available including truck transport and rail transport as well as intermodal transport (a system where truck bodies are loaded onto or are used as railcars).

### Stationary Compactors

In a compactor, the charging box is loaded with loose wastes from above through a hopper or chute. A hydraulic cylinder moves a ram forward to push wastes out of the charging box and into a transfer container or a trailer. The container or trailer is attached by a hook and ratchet assembly to the compactor. As the trailer fills up, compaction takes place by the pressure applied from the ram. When a pre-set hydraulic pressure is reached, the compactor stops. There are four basic compactor arrangements which may be used including:

1. Compactor/roll-off;
2. Compactor/trailer;
3. Compactor/push pit/trailer; and
4. Self-contained trailer units.

### Open Top Trailers

The use of trailers is quite common and is used for both trucks and trains. Several floor plan arrangements are available including:

1. Tipping floor transfer stations;
2. Direct dump transfer stations; and
3. Pit type transfer stations.

### Balers For Transfer

Balers are machines that use rams to compress waste and hold it until wire ties can be placed to hold the compressed waste together in the compressed bale. Solid waste bales are generally in the 2,000 to 2,500 pound range and typical volumes are 50 cubic feet.

Baling facilities require a receiving floor area where collection vehicles unload. A loader is used to feed waste into the infeed conveyor for the baler. These conveyors are typically steel. The conveyor feeds into the baler.

A forklift or skid loader picks up the bales and loads them into the transport vehicle. For trucks, flatbed trailers are usually used due to the low trailer tare weight and consequent higher payload.

### "Other" Transfer Technologies

There are several specialized forms of equipment available for waste transfer which do not fit in any of the above categories. These systems produce a "log" or "cast" of waste material by compressing the waste through tunnels. The waste is then loaded directly into trailers. Because the compression occurs in the tunnel, trailers can be lighter weight thereby increasing payloads.

### TRANSPORT OPTIONS

#### Truck Transport

Currently, the most common method of waste transfer transport in the United States is truck transfer. The reasons for this include:

- Flexibility in siting of transfer stations:
- Flexibility in selection of final disposal sites:
- General availability of over-the-road truck drivers and equipment; and
- Flexibility in scheduling.

Waste transfer has, until recently, been used most often to avoid local waste disposal facility shortages. In areas where the

development of new waste facilities was not developed at a pace to keep up with facility closure, waste haulers found that they had to quickly provide transport to more distant sites. Usually the use of specific distant sites was not on a long-term basis. Therefore, the flexibility in final destination allowed by trucking was desired. As destination sites filled, closed, or otherwise limited the inflow of transfer waste, the transfer operators could easily shift to alternate disposal sites.

Several options are available for truck transport systems. Initially the most common vehicles used for transfer were either box or flat trailers used to haul loose and baled wastes. As transfer operations have become more common, specialized trailers have been developed to handle this specialized cargo. Today's modern transfer trailers have specially fabricated bodies often using lightweight aluminum alloys in order to maximize effective payloads. They also usually employ some type of self-unloading equipment which may be a hydraulic ram system or "walking-floor" system. The use of walking floor systems has substantially increased the effective payloads of self-unloading trailers by alleviating the hydraulic ram weight used by other trucks.

### Rail Transport

Although the use of trucks for waste transfer is most common, rail transfer is being discussed more frequently as a viable transport method. One reason for this is the move towards dedicated long-term distant disposal sites. In the case where a transfer operator can lock-in a disposal site with rail access for an extended period of time, the use of rail transport can be very cost-effective, especially in cases of long transport distances. Even for relatively short transport distances, the use of new railcar designs can make rail transfer economical. The following issues must be considered by those considering rail transport for waste transfer.

1. Is the use of rail transport economical compared to motor transport?
2. Are the anticipated costs for rail transport being prepared in a manner for fair comparison with motor transport? As an example, rail transfer costs are often prepared with the assumption that all equipment will be new. Truck transport usually does not make this assumption.
3. Rail transport will tend to drive waste disposal contracts towards longer terms. This is a real advantage for waste-to-energy disposal projects but even landfill disposal sites can show economical advantages for rail transport if long-term contracts are possible.
4. The common misconception that rail transport is cost-effective only for long distance must be avoided. Rail transport can be cost-effective at relatively short distances (25-30 miles) if project conditions are correct.

There are three modes of rail transport available for consideration broadly categorized by the use of standard or slightly modified railcars, specialized railcars and intermodal transport.

### 3.3.1.3 Environmental And Siting Considerations

Environmental and regulatory issues relating to the siting, design, construction and operation of a waste transfer facility can be complex. Of particular concern are the issues of water pollution, odor, noise, traffic, aesthetics, land use compatibility, and floodplain or wetlands impacts.

## ENVIRONMENTAL CONSIDERATIONS

### Water Quality

Waste transfer facilities can potentially impact water quality by allowing runoff of liquid which has been in contact with waste to be discharged to surface water. There are three sources for

origination of liquids at the facility: liquids arriving with the waste or snow and ice tracked into the facility by delivery vehicles; water used for washdown of the facility; and precipitation occurring outside of the building but at the site.

The first two sources of liquid are easily captured within the facility by the use of interior plumbing and drains. This plumbing is tributary to a municipal sewer system or an on-site sewage treatment facility. The resultant liquid is, therefore, collected and treated prior to discharge to surface waters.

Liquids originating outside of the building are best kept from becoming contaminated by effective housekeeping. Waste should not be present outside of the building. Precipitation is normally routed through a series of storm drains for discharge. Often, facilities will employ catch basins and other settling appurtenances to control the discharge of particulate matter.

### Odor

The potential for odor emission and resulting impacts to surrounding land uses is an important consideration when providing waste transfer facilities. Effective odor control mechanisms must be included in the facility operations in order to prevent the migration of odors beyond the facilities boundaries.

Objectionable odors generally form when municipal solid waste is left for more than one day. Most waste transfer operations are designed to remove all waste from the facility on a daily basis. In other words, all waste delivered during the day is transferred out by the end of the day.

Some large scale facilities are designed not to empty every day. In these facilities the use of an induced inward draft may be used to pass fresh outside air through the entry doors and out

through a usually high vent or series of vents which can serve to disperse odors. A facility may also employ mechanical/chemical odor cleansing equipment.

Use of these methods of odor control can effectively prevent odor migration at waste transfer facilities.

### **Noise**

The primary sources of noise from a waste transfer facility include construction of the facility, daily operation of equipment inside the facility, and facility-generated traffic. In reference to construction noise, it is estimated that a waste transfer facility sized to meet the needs of DuPage County would involve a construction period of 18 to 24 months. Operation of construction equipment is normally limited to daytime hours and required to comply with local ordinances.

The major source of operational noise is use of the equipment inside the facility. Equipment will include mechanized movers such as end-loaders but may also include crane-type assemblies and balers. Other sources of noise such as ventilation fans, conveyors and loud speakers are comparatively insignificant and should not increase overall noise levels above other operational sources.

The truck (or train) traffic generated by a waste transfer facility can increase surrounding traffic noise levels. Any increase in traffic noise would be expected to be limited to daytime working hours.

### **Traffic**

Siting a waste transfer facility would require a detailed analysis of the short and long-term traffic impacts caused by the facility. These impacts will result primarily in an increased

concentration of truck traffic, assuming the transfer facility is located away from the existing disposal site(s). Some traffic will result from the employees of the facility.

## SITING CONSIDERATIONS

### Aesthetics And Land Use Compatibility

It is essential that the surrounding land use and aesthetic treatment of any proposed waste transfer facility be considered during project development. Aesthetic treatment of the facility can mitigate apparent negative impacts of the facility. Enclosing the operations of the facility and use of an architecturally pleasant building can be used effectively. The use of sight berms, landscaping or fencing can be used to screen the facility from view. Finally, careful consideration of site layout can minimize public views of waste vehicles and tipping areas (doors).

The selection of a proper site for a waste transfer facility should be carefully considered in order to meet the expected goals for the provision of the waste transfer facility. The facility must be located at a site which is both convenient to local haulers delivering waste to the facility as well as being convenient for use for the transport mode selected to transport the waste to the disposal site.

In previous solid waste planning efforts, the size of DuPage County was shown to not necessarily require the provision of two waste disposal facilities for reasons of local transport effectiveness. The county is roughly 18 miles square which is well within the waste industry's normal transport distance range for packer vehicles. Therefore, the placement of just one transfer facility in the county would appear to offer no significant disadvantage from a local waste transport standpoint.

## Land Requirements

The amount of land required for a transfer facility will depend on the size of the facility to be constructed; the type of transfer technology to be employed as well as the transport method to be used; and whether or not other processes will be employed at the facility such as materials recovery through waste processing. The most significant constraint imposed on the requirement for the size of the site at this time though is specified in the Illinois Environmental Protection Act at Section 22.14:

"No person may establish any regional pollution control facility for use as a garbage transfer station, which is located less than 1000 feet from the nearest property zoned primarily for residential uses or within 1000 feet of any dwelling except in counties of at least 3,000,000 inhabitants."

If it is assumed that the minimum size for a building would be on the order of 45,000 square feet, the minimum acreage required to meet this setback requirement, if surrounded by an area of residential nature, would be approximately 112 acres. This estimate represents worst case conditions in the assumption that the facility would be surrounded by residential land but is illustrative when considering the general nature of land use in DuPage County. In order to provide this setback requirement it would be advantageous to use the distances for buffer which may be afforded by other land uses in a given area. Siting a facility next to an existing industrial use zoned area or agricultural use area are examples which would provide obvious advantages because the total land required to achieve the required setbacks would not have to be purchased as part of the project.

A transfer station of sufficient size to meet the County's needs can be expected to occupy anywhere from 5 to 20 acres, depending on the facility's specific development plan and mode of transport.

### Transportation Accessibility

In addition to considering the impact that the transfer facility will have on surrounding traffic conditions, consideration must be given to locating the facility close to or on major transportation routes. This is especially important where truck transfer is anticipated because the out-going trucks will be large over-the-road vehicles. If rail transport is to be used, the site must be located in the immediate vicinity of a rail line unless intermodal transport is proposed.

### Proximity To Utilities

The utilities required for the operation of a waste transfer facility include telephone, sewer, electric, water and possibly natural gas. Selection of a site where utilities are readily available is preferred because the cost of extending utilities can be substantial.

### Site Subsurface Considerations

It can be expected that a waste transfer facility will require the construction of a relatively large building designed for heavy use. Heavy equipment and truck traffic will be utilized at such a facility. These conditions demand that stable soils capable of bearing these loads exist at the site. Depth of groundwater and bedrock should also be examined within the context of potential construction impacts.

#### 3.3.1.4 Costs

### CAPITAL COSTS

Costs specific to the construction of a transfer station are influenced by the building's construction, architectural treatment,

technology selection and land costs. In Appendix A-4, the estimated costs to develop and construct a transfer facility in the range of 800 to 1,000 tons per day using open top truck trailer technology is provided. A cost of approximately \$7,475,000 is estimated for development/construction costs. Wheel loaders would all approximately \$200,000 to the estimated cost.

A transfer station sized at 1,000 tons per day is capable of transferring 286,000 tons per year if it operates 5.5 days per week. The estimated cost per ton then is approximately \$1.45 over the 20 year useful life. This does not include the cost for financing the capital costs.

#### OPERATING COSTS

In Appendix A-4, the costs to operate the example transfer station described above are estimated. On a per ton basis, the cost to operate is estimated at approximately \$1.81.

The costs to transport the material is directly dependent on the method of transport to be utilized and the distance to the disposal site.

#### SUMMARY OF COSTS

The costs for construction and operation of a waste transfer facility sized at 1,000 tons per day are estimated at \$3.26 per ton. This cost does not include the cost of financing (interest), transport equipment, or transport charges. The cost is provided as an estimate only for illustration purposes. Transfer capability for DuPage would either require a larger facility or multiple facilities based on DuPage's waste generation.

### 3.3.2 Combustion Options

#### 3.3.2.1 Overview Of Systems

Since the turn of the century, solid waste combustion has been an integral component of many solid waste systems. Used both publicly and privately, combustion has served several waste management purposes including the elimination of infectious materials, the destruction of hazardous wastes, and the avoidance and reduction of disposal costs. Two of the principal objectives of solid waste combustion are waste volume reduction and energy recovery.

With landfill space diminishing at a rapid rate throughout the nation, combustion is viewed as a viable means by which the volume of solid waste requiring disposal can be reduced. Although combustion alternatives do not eliminate the need for a landfill because the residues of combustion also require disposal, the volume of solid waste that must be disposed of in landfills can be reduced by approximately 90 percent through combustion. In addition to achieving a reduction in the overall volume of waste requiring disposal, combustion offers the potential to recover energy in the form of steam and electricity from the combustion process. The production of energy helps to offset the cost of operating a combustion system and also helps to conserve other fuels that would have to be burned to produce an equivalent amount of energy.

These benefits of solid waste combustion have resulted in the construction of a number of combustion systems in the United States. Energy recovery is an integral component of virtually all new solid waste combustion projects because of the economic and environmental benefits this reuse provides. The 1988-89 Resource Recovery Yearbook, published by Governmental Advisory Associates, Inc., identified 202 combustion with energy recovery (waste-to-

energy [WTE]) projects in 1988 that were in an advanced stage of development, construction, or currently operating. An additional 139 facilities were in the conceptual planning stages. A recent survey conducted by BioCycle magazine (March 1990) identified 154 operating WTE facilities in the United States.

Energy recovery combustion technologies recover useful energy through the combustion of solid waste in specially designed furnaces equipped with boilers. In recent years, WTE systems have been receiving increasing consideration and application as an alternative to continued full reliance on sanitary landfills. As stated previously, more than 100 energy recovery facilities are either operational or under construction in the United States. This increased use of energy recovery combustion systems has resulted in the development of a number of new energy recovery technologies. In addition, older combustion technologies have been continually modified and improved.

Construction of new combustion facilities without energy recovery is not generally considered a feasible option for solid waste management, when considering the costs of implementation.

The two major classifications of WTE systems discussed in Appendix A-4 are mass firing and refuse-derived fuel (RDF) systems. Under the discussion of mass-firing, the concept of mass-firing technology applied to processed waste is discussed.

#### MASS FIRING

Mass firing consists of feeding and burning MSW in its essentially unprepared or as-received condition with the exception that items too large to pass through the feed system are removed. In a typical mass firing facility, MSW is loaded from a storage pit onto a grate that moves the MSW through a combustor. Agitation of the MSW on the grate is essential to achieving complete combustion in a mass firing facility.

Mass firing systems can be divided into the following two major categories.

1. Modular combustion units (MCUs), which are used primarily for small-scale facilities and are, for the most part, shop-assembled and shipped as modules, for use individually or in multiples, as required to meet the wastestream volume.
2. Field-erected units, which are used primarily for large-scale mass firing operations.

### Field-Erected Units

In a plant designed for mass firing, unprepared refuse (as received from collection vehicles with little or no sorting) is processed directly into a combustion furnace. The two general categories of field-erected combustion furnaces are refractory and waterwall units.

Refractory units have a refractory furnace chamber and a separate waterwall boiler. A refractory furnace is lined with a heat-resistant, radiant refractory material that protects the walls of the furnace chamber from the direct heat of the combustion process.

Waterwall units have an integrated refractory-lined waterwall furnace and boiler. The walls of the furnace are lined with tubes that circulate water and absorb the heat of combustion. The waterwall design decreases the need for refractory material because the tubes are in direct contact with the furnace fire and remove combustion heat immediately. This results in a more efficient utilization of combustion energy than with refractory units.

In both types of units, the heat generated from the combustion process is recovered as steam by waterwall radiation boilers. The steam may be sold directly or converted to electricity using a turbine generator and then sold, usually to a large utility or industrial operation.

Also, in both types of units, refuse is burned on an inclined, step-like grate that reciprocates, rocks, or vibrates, agitating the refuse, which results in more complete combustion. Combustion air is introduced beneath the grates (underfire air) and above the refuse bed (overfire air). Underfire air aids combustion and cools the grates, while overfire air promotes turbulent mixing and complete combustion.

The gaseous products of mass firing combustion pass through air pollution control equipment. Ferrous metals and other materials can be recovered from the bottom ash for eventual sale, and the remaining bottom and fly ash from the air pollution control systems can be disposed of in a landfill.

According to the Governmental Advisory Associates publication (1988-1989 Resource Recovery Yearbook), field-erected mass firing units comprise approximately 29 percent of the existing WTE facilities in the United States and have proven to be the most reliable technology for WTE. Field-erected mass firing units account for over 62.8 percent of all facilities in advanced planning stages in the United States.

Problems that have been experienced at some field-erected mass firing facilities include grate failure and superheater corrosion. Grate problem have been largely overcome through improved design and operating practices, and superheater corrosion has been minimized by limiting the upper steam temperature and pressure. Advances in metallurgy have also helped reduce superheater corrosion. It is important to note that at mass firing facilities where grate failure and superheater corrosion have occurred, the problems have been corrected and the facilities have continued to operate. In addition, because mass firing facilities are usually designed with two or more combustion lines, the combustion process does not normally halt if one line is out of service.

## Modular Combustion Units

MCUs are a prefabricated variation of mass firing technology. These furnace/boilers are available in a wide range of small-scale sizes that fire as-received solid waste. Individual units range in capacity size from 10 to 200 tons per day (tpd). MCUs differ from conventional mass firing waterwall (field-erected) units in a number of ways, including the following.

- o MCUs are a standard design and largely shop-assembled to minimize the amount of costly field erection work required.
- o MCUs sometimes use refractory furnaces and waste heat boilers as opposed to waterwall furnaces, which are used in field-erected units.
- o Some MCUs must be batch-fed rather than continuously fed.
- o Some MCUs operate under starved air conditions, as opposed to excess air conditions. Starved air conditions produce pyrolytic decomposition of refuse in a primary chamber, which causes combustion of products of the pyrolysis process (gases) in a secondary chamber, sometimes with the assistance of auxiliary fuel burners.
- o MCUs generally produce steam at temperatures and pressures lower than conventional mass firing units. Only a few MCU facilities generate electricity.
- o MCUs sometimes use rams and hearths as opposed to other movable grate systems.
- o MCUs may require additional pre-sorting of the refuse to remove large bulky items due to the smaller unit size.

Because MCU manufacturers use different combinations of technological features, the above statements differentiating MCUs from conventional mass firing waterwall technology are conditional. The most common MCUs use one of the following combinations of technologies:

- o Excess (controlled) air refractory furnaces and waste heat boilers;
- o Excess (controlled) air waterwall boilers; or
- o Starved air refractory furnaces and waste heat boilers.

The relatively small size of MCUs limits their application to low volume wastestreams (approximately 500 tpd or less). MCUs have proven, historically, to be a popular technology in many applications, particularly for areas with relatively low populations. MCUs comprise approximately 49 percent of the facilities currently operating throughout the United States. However, the success of MCUs has been mixed.

Problems with waste feed and ash removal systems were common with many early MCU designs. Many of these designs were based on fixed-bed, batch-fed concepts in which refuse was fed into the units at a fixed rate until the chamber became filled with ash. These units often required extensive overhauls (replacement) of the refractory linings on a fairly frequent basis (4 to 7 years). Such overhauls represent a significant expense that must be budgeted and accounted for during comparisons and analysis of MCUs with other technologies.

Because of their low processing capacity compared to mass firing units, MCUs are generally restricted to industrial or institutional applications (e.g., combustion of hospital waste). Most of the larger mass firing projects currently underway in the

United States are using field-erected unit technology; MCUs account for only 16.5 percent of United States combustion units in advanced stages of planning.

### Mass-Firing With Pre-Processing

Mass firing mixed MSW combustion systems do not require extensive pre-processing of the waste into a homogenous fuel material like Refuse-Derived Fuel systems. However, removal of recyclable materials from the raw waste prior to combustion usually benefits the operation of a mass firing facility. For example, pre-processing can result in a waste fuel with a higher heat content on a per pound basis and smaller amounts of ash residue. Facility operational concerns, such as aluminum and glass slagging and interference with grate operation, can also be alleviated by conducting material separation prior to combustion. Pre-combustion removal of recyclables from the MSW can be accomplished by either source separation programs prior to arrival of the waste at the WTE facility or by pre-combustion sorting at the WTE facility (refer to Appendix A-3 for a discussion of materials recovery by waste processing). Although some existing combustion facilities have recovered materials by waste processing prior to burning, materials recovery occurs most commonly at mass firing facilities with post-combustion processes that recover aggregate ferrous and nonferrous metals. The recovery of materials prior to combustion in a mass firing system is best achieved through an aggressive source separation program designed to remove household hazardous wastes and recyclable materials prior to introduction to the wastestream. However, pre-combustion materials recovery can be conducted at the mass firing facility and generally consists of low- to medium-technology recovery systems such as bag breaking, screening, and handpicking. High-technology pre-combustion processing is most economically used with refuse-derived fuel (RDF) combustion technologies.

## PREPARED (REFUSE-DERIVED) FUEL

The composition of MSW as fired in a mass firing system is heterogenous and varies on a seasonal and even daily basis. The characteristic that distinguishes prepared fuel, or refuse-derived fuel (RDF), combustion units from mass firing units is that the RDF combustion system requires incoming waste to be processed to increase the uniformity of the material fed to the combustor. Accordingly, incoming MSW is usually shredded and screened by size and density and certain recyclable, noncombustible materials are removed.

### Processing Methods

The objective of a solid waste processing unit is to produce as homogenous a fuel product as possible and consists of the following processes: 1) screening of nonprocessable materials, 2) extracting marketable by-products, and 3) shredding and sizing the remaining waste. The product of such processing units is called RDF. This fuel can potentially be used as supplemental fuel in existing utility and industrial combustion units or as the primary fuel in dedicated furnace and boiler units that are designed, built, and operated solely to burn RDF. The by-products of RDF production may include metals, grit, paper, glass, and plastic, many of which can be marketed as recyclables. The degree of preparation in RDF processing systems is determined by the type of combustion technology in which the fuel will be used and the extent to which materials recovery is practiced. General classifications of RDF processing systems include Dry Processing, Wet Processing, and Densified Fuel Production. The type of processing system used depends on the fuel specifications of the intended RDF combustion unit.

Dry processing units generally involve, at a minimum, various stages of size reduction, separation (screening), and magnetic

separation; in addition, shredding and air classification can be included to improve material or fuel recovery efficiencies. The primary advantages accrued from the dry processing of MSW compared to other processing systems include better ability to recover material components from the wastestream; production of a more homogenous fuel, enabling better control of the combustion process; and more efficient transportability of the fuel product.

Wet RDF processing units hydropulp solid waste after initial pre-processing. This process is closely related to the hydropulping operations used in the pulp and paper industries. Liquid cyclones, which are spinning cylinders used to separate materials, accept slurry from the hydropulper and separate combustibles and noncombustibles. The combustible fraction of the RDF stream is then dewatered and the remaining fiber is burned.

The advantages claimed for hydropulping operations are the reduced potential for explosion during size reduction and production of a cleaner, more homogeneous fuel than that produced by dry processing. However, wet processing lowers the net energy recovery efficiency of the fuel because of the energy required to mechanically remove moisture from the fuel and then drive off the remaining moisture in the combustion process.

In densified RDF production, incoming waste is processed to remove most of the inorganic material using a dry process and reduced to an RDF with a nominal size of less than 1 inch. This product then undergoes a densification process by one of several types of pelletizing, briquetting, or cubing machines. Pelletizing, briquetting, and cubing consists of subjecting the RDF to high pressure and sometimes high temperature, with or without a binding medium, to reform the waste into dense particles. Generally, pellets and cubes are formed by an extrusion process, while briquettes are molded under high pressure.

The advantages of densified or pelletized RDF are easy handling and storing capabilities, which reduce problems with spillage and dust. In addition, densified RDF has a higher bulk density than nondensified fuel, which allows for greater transportation payloads. Also, its size and particle density allow densified, pelletized, and briquetted RDF to be used as a supplemental fuel in conjunction with certain older model unpulverized coal handling combustors. RDF also has a comparably lower sulfur content than coal, making it a desirable fuel to reduce stack emissions of sulfur dioxide in coal-handling units. However, newer coal burning facilities are frequently designed to use pulverized coal and, therefore, cannot generally burn densified RDF.

A disadvantage with densified RDF is its comparatively high cost. The preparation of densified RDF imposes additional energy and maintenance requirements and capital costs for fuel handling, metering, conditioning, and densification equipment.

Most RDF processing units have experienced problems with the various processing steps, including shredding operations, material separation, and storage. Some of the major problems, such as the high rate of wear of shredder components, long-term storage, and explosions associated with shredding and storage have not been completely resolved. These problems affect the full-scale operational reliability of RDF processing units. The high cost of shredder maintenance has now been accepted as a normal operational expense, and the difficulties associated with long-term RDF storage are being overcome by carefully scheduled processing operations that allow RDF facilities to be used as interim surge silos or bins, rather than for long-term storage.

RDF processing units incorporate many interdependent mechanical processes that are susceptible to breakage. Because contractual obligations regarding fuel delivery may have severe

penalties, equipment is generally designed with redundancy and bypass capabilities so that fuel production is not halted or impeded if equipment failure or loss of material markets occur. The redundancy required to achieve a high degree of reliability can substantially increase capital costs.

### Combustion Methods

RDF may be fired in a number of different types of combustion units to complete the energy recovery concept. Although many factors must be considered, decisions concerning the type of combustion unit are influenced significantly by whether new, dedicated units, or an existing boiler facility will be used. New, dedicated boilers must be installed if an existing boiler facility is not available or if it is not feasible to modify existing units for supplemental firing of RDF.

The cost of modifying an existing combustion system for supplemental firing of RDF is generally more economical than constructing a new, dedicated unit. Pulverized coal boilers and spreader-stoker boilers designed for coal, bark, wood waste, or other solid types of fuel are best suited for modification to RDF firing. These types of units generally have the required ash handling system and soot blowers to facilitate the firing of RDF. While dedicated units do not realize the cost savings of using existing equipment, they do have the advantage of being designed and operated for specific conditions and fuel specifications.

The most common furnace design used to fire RDF is the spreader-stoker furnace boiler. This design concept has been derived from granulated coal firing systems. In spreader-stoker systems, RDF is introduced to the furnace by pneumatically assisted mechanical spreaders. The RDF then ignites and burns in partial suspension. Unburned material drops onto a traveling stoker where firing is completed before ash residue is discharged. The RDF used

in these systems varies from highly prepared fuels that have undergone air classification and materials recovery to coarse fuels from shredders. The more recent systems constructed and proposed have been designed for coarse fuel, which is in response to problems with the system for classifying MSW and the difficulty experienced in producing materials of marketable quality.

Spreader-stoker boilers have been in successful operation for decades, firing coal and other low grade fuels. However, most of the currently operating RDF units have experienced various design and operational problems.

In full suspension-fired units, a very fine sized fuel is blown into a furnace and is burned by either horizontally or vertically (tangentially) fired burners. The fuel and primary air are introduced in a manner that produces turbulent, cyclonic motion, which is required for complete combustion. Fuel particles that are injected into the furnace dry rapidly and then volatilize, ignite, and burn almost completely in suspension in a relatively short time.

The RDF used in suspension-fired units must be processed to a small particle size (generally allowing 95 percent by weight to pass through a 2-inch square mesh screen) and have had most metals, glass, and other inorganic material removed.

The principal advantages of suspension-fired units are as follow include the fact that arrangement to accommodate burning multiple fuels is possible; lower grate maintenance is required compared to other RDF-fired or mass firing systems; and higher energy recovery efficiency than mass firing is provided due to lower excess air requirements.

Disadvantages of suspension-fired systems include the requirement of highly refined RDF; no operating systems are

currently firing solely RDF; and furnace gases of RDF systems have a high entrainment of particulate matter.

In fluidized bed combustion, the combustion process occurs within a bed of suspended inert material. The inert bed medium, usually graded silica sand, is set in fluid motion within an enclosed space by passing hot air through the bed. Fluidization of the bed medium begins as the pressure drop across the bed becomes equal to the cross sectional weight of the bed, achieving minimum fluidization velocity. As air velocity is increased, the hot bed medium expands, allowing gas to bubble through it in such a way that all particles are in homogenous boiling motion. In this state, dense suspensions of fine solids behave similar to a liquid. Combustion occurs in and above the bed, is self sustaining, and is nearly complete because the RDF and air are well mixed in the fluidized zone. Moisture in RDF burned in this manner is rapidly evaporated, and a relatively constant temperature gradient is maintained throughout the bed by an instantaneous rate of heat transfer. RDF requirements for fluidized bed combustion units vary with different manufacturers. However, the product should ideally be free of metal and glass to avoid fusion of bed particles with combustion ash.

When first implemented, RDF-firing units suffered from extensive operational difficulties such as ash overload due to the higher ash content of the fuel, excessive wear on unit hardware due to unclean RDF, and, as with mass firing units, boiler tube corrosion problems due to the high chlorine content of MSW. However, recently implemented facilities have placed greater emphasis on the specifications of the RDF (resulting in more complete pre-processing) and have installed new, dedicated combustion units, which are specifically designed to fire RDF. These improvements in RDF-firing technology have increased the efficiency of the resource recovery and volume reduction objectives of RDF systems.

### 3.3.2.2 Environmental And Siting Considerations

Environmental and accompanying regulatory issues related to the siting, design, construction, and operation of a WTE facility are diverse and often complex. Potential areas of concern include air and water pollution; the disposal of process residues; and odor, noise, traffic, aesthetics, land use compatibility, floodplain encroachments, and wetlands impacts. This section identifies and discusses these impacts. Where applicable, the processes and procedures involved with regulatory compliance for construction and operation of a WTE facility are also discussed.

#### ENVIRONMENTAL

#### Air Quality And Pollution Control Technologies

##### Air Quality

Emissions from the combustion of MSW are complex and are dependent on the composition of the wastestream, combustion method and operating characteristics, extent of combustion, and types of air pollution control devices used.

The assessment of potential impacts to the air from operating a WTE facility must necessarily occur within the context of existing environmental law. Current rules and regulations, as related to air pollution from WTE facilities, stem largely from provisions of the 1970 Clean Air Act and subsequent amendments. The Clean Air Act is administered by USEPA and establishes a permitting procedure for new stationary sources of air pollutant emissions that is applicable to WTE facilities.

In Illinois, the air emissions permitting functions of USEPA have been delegated to the Illinois Environmental Protection Agency (IEPA). However, IEPA's permit programs must operate within the

regulatory framework established by USEPA. USEPA and IEPA have promulgated air quality regulations that, together with a permitting process that sets permitting precedents, define air quality standards and impose design constraints and requirements on new or modified WTE facilities. Of these regulations, if a WTE facility were built in DuPage County it would potentially be subject to the following:

- o Ambient air quality standards (AAQSS);
- o Prevention of significant deterioration (PSD) regulations;
- o Nonattainment area regulations;
- o New source performance standards (NSPSS); and
- o National emissions standards for hazardous air pollutants (NESHAPS).

For a detailed discussion of these regulatory requirements and how they apply to WTE facilities, please refer to Section 11.0 of Appendix A-4. These regulatory requirements are summarized in the following paragraphs.

Sections 108 and 109 of the Clean Air Act address the establishment of, and required revisions to, national ambient air quality standards (NAAQSS). Section 108 of the Act mandated that USEPA identify pollutants that were reasonably expected to endanger public health or welfare and to issue air quality criteria for them. According to the Act, these air quality criteria are to reflect the latest scientific information regarding all identifiable effects a pollutant may have on the public health or welfare. Section 109 of the Act directs USEPA to propose and promulgate regulations that set NAAQSS for pollutants identified under Section 108.

Any major stationary source of air pollution, as defined by Prevention Of Significant Deterioration (PSD) regulations, must

undergo PSD review before a permit can be issued for construction in an attainment or unclassified area. The definition of a major stationary source includes any municipal WTE facility capable of charging more than 250 tpd of refuse and having the potential to emit 100 tons per year or more of any air pollutant regulated under the Clean Air Act. Potential to emit is based on the maximum design capacity of a facility and takes into account pollution control efficiency. The PSD review process requires the following actions for approval:

- o An evaluation of alternative control devices and techniques demonstrating that best available control technology (BACT) will be applied to the new source;
- o An analysis of existing ambient air quality in the vicinity of the new source;
- o A modeling analysis demonstrating that emissions from the new source, in conjunction with other nearby sources, will not cause a violation of AAQSS or PSD increments;
- o An assessment of the source's impact on soils, vegetation, and visibility; and
- o An analysis of the air quality impacts associated with indirect growth created by the new source.

The application of BACT, one of the principal components of PSD regulations, is addressed in subsection 9.4 of the Illinois Environmental Protection Act. The act defines BACT as "an emission limitation (including a visible emission standard) based on the maximum degree of pollutant reduction, that IEPA, on a case-by-case basis, taking into account energy, environmental and economic impacts, determines is achievable through the application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques."

Siting a major new stationary source in a nonattainment area would require that a permit be obtained in accordance with USEPA's Emission Offset Interpretive Ruling IEPA's nonattainment rules also

require emission offsets. The new source review for a facility locating in a nonattainment area requires design for the lowest achievable emissions rate (LAER).

Both federal and state regulations define LAER as the most stringent rate of emissions based on the following:

- o The lowest emission limitation that is contained in the implementation plan of any state of such class or category of stationary source, unless it is demonstrated that such limitation is not achievable;
- o The most stringent emission limitation that is achieved in practice or is achievable by such a class or category of stationary source; and
- o The applicable NSPS.

The primary difference between LAER and BACT determinations are that BACT regulations allow for consideration of energy, environmental, and economic factors, whereas LAER determinations are based strictly on current technological capabilities.

In addition to the achievement of LAER, the new source review for a facility locating in a nonattainment area requires the following actions.

- o The certified compliance with all applicable standards of all existing major sources owned or operated by the applicant in the same state as the proposed source.
- o Emissions offsets from existing sources in the area of the proposed source that will provide a positive net air quality benefit in the affected area and result in reasonable progress toward the attainment of applicable NAAQs. However, federal regulations exempt WTE facilities that burn MSW from the emissions offset requirement.

USEPA promulgated proposed regulations on December 20, 1989 that specifically address emissions from MSW combustion facilities. These new regulations, which establish the maximum allowable rates at which pollutants may be emitted into the atmosphere, will be administered by the states under Section 111(d) of the Clean Air

Act. The regulations constitute a major change in the regulatory environment for siting, designing, and operating MSW combustion facilities.

Upon finalization of the regulations, state agencies will be required to adopt and submit plans for compliance by September 1991. USEPA will establish a procedure for reviewing and approving state regulations. Following promulgation of state regulations, existing facilities (with few exceptions), will be required to be in compliance within 3 years.

A major aspect of the regulations involves USEPA's authority to regulate pre-combustion activities and MSW management issues that contribute to emissions from MSW combustion facilities beyond typical point-of-discharge standards.

Under the proposed regulations, all MSW combustion facilities will be required to incorporate materials separation programs prior to combustion. A 25 percent reduction in weight (annual average) will be required for some or all of the following materials: paper and paperboard, ferrous metals (including white goods), nonferrous metals, glass, plastics, household batteries, and yard waste. In addition, MSW combustion facilities would be prohibited from combusting lead-acid vehicle batteries greater than 5 pounds in weight and would be required to implement a program that would remove household batteries from the wastestream. According to the proposed regulations, the weight reductions could be achieved by on-site mechanical or manual separation, a community source reduction or materials separation (recycling) program, or a combination of these. Detailed record keeping and reporting requirements of performance tests and progress of the materials separation program are also proposed under the regulations.

## Air Pollution Control Technologies

The range of elements, or air pollutant emissions, subject to regulation and control is becoming increasingly broad. These emissions fall under the following major categories or classes of air pollutants: particulate matter, acid gases, organic materials, nitrogen oxides, and heavy metals.

Air pollution control technologies are often developed and discussed with specific reference to a particular pollutant category. However, the application of a control technology for one pollutant or class of pollutants may have positive or negative effects on the control of several other pollutants. Therefore, the development of an effective air pollution control strategy requires a comprehensive assessment of a broad range of control technologies and their impact on all regulated pollutants.

in Section 11.0 of Appendix A-4, air pollution control technologies are discussed in detail. The following text summarizes that detailed discussion.

The particulate emissions from MSW combustion are composed of fly ash from the burning of waste, reaction products from the control of acid gases, and unreacted dry lime or caustic soda compounds from the scrubbers. Electrostatic precipitators and fabric filter collectors are the most proven control technologies for minimizing particulate emissions from an MSW combustion facility.

Electrostatic Precipitators. In an electrostatic precipitator, the incoming dust-laden flue gas, reaction products, and fly ash are distributed uniformly between rows of discharge electrodes and grounded collecting plates. With an electric charge applied, the particulates are driven to the collecting plates, where they collect.

The particulates are periodically removed by mechanical rapping, which generates a vibration in the electrodes and plates. The particulate material is collected in hoppers beneath the precipitator with minimum re-entrainment of fly ash. Fly ash is periodically discharged from the hoppers through rotary air lock valves, mechanically discharged to a truck or container, and then hauled to a landfill.

Precipitators exhibit the following advantageous characteristics for application at a WTE facility:

- o High efficiency and reliability;
- o Efficient operation within a wide range of temperatures;
- o Low potential for fire and explosion; and
- o Low power demand.

Fabric Collectors (Baghouse). Fabric collection, or filtration, is accomplished by accumulation of particles on a woven, felted fabric surface. Rather than using large, flat collection surfaces that would require very large and more costly collectors, the fabric is formed into cylinders or bags, and numerous bags are installed within a module. Several modules comprise a complete fabric collector. The building that houses the fabric collector is generally referred to as a baghouse.

The particulate-laden gas stream is distributed evenly among the bags within a collector by a common entry chamber that generally also serves as a holding bin for collected particulates. The gas flows up the inside of the fabric bags and through the fabric, depositing the particles on the filtering surface. Clean air is then released to the atmosphere. Accumulated deposits on the dirty side of the bags must be periodically cleaned to decrease resistance to

gas flow through the filter cake, which causes an increased pressure drop across the fabric collector and affects both the cost-effectiveness and operating efficiency of particulate collection.

Most existing WTE facilities use electrostatic precipitators for the control of particulate emissions. However, fabric filters are being used with increasing frequency, due largely to the greater acid gas removal efficiency that they provide. Both technologies can remove 95 to 99-plus percent of the total particulates from the gas stream. However, some additional removal of residual acid gases occurs in the filter cake on the bags of a fabric filter due to the presence of unreacted absorbent. Because the precipitator does not function by requiring the gas to pass through the collected particulate, this residual cleaning is not present in the precipitator.

Removal of acid gas contaminants is achievable by the use of wet or dry acid gas scrubbers.

Wet Scrubbers. A wet scrubber may be an open spray tower, a tower filled with plastic or ceramic packing, or a venturi scrubber that relies on a constriction in emissions ductwork as the point of introduction of the scrubbing medium. In the types of wet scrubbers discussed, the scrubbing solution can be introduced either counter-currently (opposing the direction of gas flow) or concurrently (parallel to the flow).

Wet scrubbers have somewhat higher overall removal efficiencies (80 to 95-plus percent) for acidic gases than dry scrubbers (70 to 90 percent), but the increased maintenance and operating costs of wet scrubbers make the dry scrubbing option more economical.

Dry Scrubbers. Dry scrubbers, or acid gas reactors, do not use as large a quantity of aqueous absorbent solution to capture and neutralize acidic contaminants as wet scrubbers. Consequently, the labor, power, and maintenance requirements associated with a dry system are less than that for a wet system.

The operation of a dry scrubbing system begins, as it does for a wet system, with the preparation of a lime or caustic alkaline solution that is pumped to a rotary or dual-fluid (compressed air solution) spray nozzle for dispersion into the combustion gas stream.

A fine spray of absorbent solution is then introduced into the combustion gas stream, where the gaseous contaminants react chemically with the solution droplets, neutralizing the acidic gases and generating salts. The water in the scrubbing solution is simultaneously evaporated as the reactions occur, cooling the gas stream. The ratio of solution to gas is monitored and maintained so that no liquid remains or falls to the bottom of the spray tower reactor, which differs notably from wet scrubbers. This stage of operations explains the dry designation of dry scrubbing.

Reaction particles and fly ash from the combustor that are too large to remain suspended in the gas stream fall to the hopper bottom of the spray reactor and are removed for disposal. Smaller reaction particles and fine fly ash exit the dry scrubber and enter an adjacent particulate control device, either an electrostatic precipitator or a fabric collector.

MSW combustion processes are ideally designed to convert organic materials to carbon dioxide and water. However, inefficiencies in the combustion process can result in the emission

of substantial quantities of carbon monoxide and various organic compounds. Organic compounds of particular concern include PCDDs and PCDFs. There are two complementary strategies to the control of organic emissions from MSW combustion units. One strategy, commonly referred to as combustion control, involves the minimization of pollutant emissions through optimization of the combustion process. The other strategy involves the post-combustion use of pollution control equipment. Combustion and post-combustion control technologies are not exclusive. In fact, their simultaneous use is desirable for achieving the most effective control of organic emissions.

To achieve the thorough combustion required for minimizing emissions of organic parameters, modern WTE facilities carefully monitor and control the combustion characteristics of time, temperature, and turbulence (mixing). There is general agreement that the efficient thermal destruction of chlorinated aromatic compounds requires temperatures of no less than 870 degrees Celsius (1,600 degrees Fahrenheit), at residence times of greater than 1 second under extremely well-mixed conditions. Most properly designed and operated MSW combustion units can achieve flame temperatures in excess of 1,300 degrees Celsius (2,370 degrees Fahrenheit) with commensurate combustion chamber temperatures of 980 degrees Celsius (1,800 degrees Fahrenheit) (California Air Resources Board, May 24, 1984. Air Pollution Control at Resource Recovery Facilities). In addressing air emission control requirements, USEPA has recently developed "good combustion practices" that are designed to limit both carbon monoxide and organic emissions.

In addition to combustion control, supplementary control of organic emissions can be achieved through post combustion use of pollution control equipment. Studies have shown that organic compounds can adhere to particulate matter in a process called enrichment. Organic compound enrichment of particulates is

dependent on particle size, number of particles, flue gas temperature, and particle composition. In general, it is theorized that organic compounds are volatilized in the combustion process. As temperatures decrease in the exhaust systems, these compounds condense onto particulate matter. Because fine particulates have a greater aggregate surface area than larger particulates, they acquire a larger concentration per unit weight. The post-combustion control of organic emissions is achieved through use of pollution control equipment with high particulate removal efficiencies. Electrostatic precipitators and baghouse filters are both capable of high removal efficiencies for particulates. With the application of good combustion practices and appropriate post-combustion control, a control efficiency for dioxins and furans of greater than 99 percent is possible.

There are a variety of ways to reduce nitrogen oxide emissions at combustion facilities, including flue gas controls and combustion modifications. Flue gas controls, such as selective catalytic reduction devices, appear to offer the greatest possible reduction in nitrogen oxide emissions. In the selective catalytic reduction process, nitrogen oxide is reduced to nitrogen and water vapor by the addition of ammonia in the presence of a catalyst. However, these devices have not yet been demonstrated in MSW combustion facilities.

Selective non-catalytic reduction (SNCR) is another method of flue gas control that has been successfully used to reduce nitrogen oxide emissions. SNCR involves injection of ammonia in the upper furnace to achieve selective reduction of nitrogen oxide to nitric oxide. The ammonia reacts with the nitric oxide to form nitrogen gas. Combustion modifications are presently the most technically feasible and reliable methods for reducing nitrogen oxide emissions at WTE facilities. Combustion modifications include staged combustion, low excess air, and flue gas recirculation.

Staged combustion and low excess air techniques control nitrogen oxide emissions by reducing the quantity of organically bound, volatile fuel nitrogen that is oxidized to nitrogen oxide. Flue gas recirculation techniques generally act to suppress thermal nitrogen oxide formation by reducing temperature in the flame zone. Care must be exercised in application of staged combustion, low excess air, and gas recirculation technologies because they can, if improperly applied, reduce combustion efficiency and increase carbon monoxide and organic emissions.

Particulate matter associated with combustion is enriched with heavy metals in a manner similar to organic compound enrichment. Most of the metallic compounds released are on the surface of fine particulates. Removal of these metals is best achieved through use of equipment that can efficiently remove fine fly ash particles.

Properly designed and operated fabric filter systems currently offer the best method for consistent and efficient removal of fine, and particularly sub-micron, fly ash. Removal efficiencies of fine fly ash using these systems can be in excess of 99 percent. In addition, reduction of the temperature of the flue gas stream to between 200 and 230 degrees Celsius (300 to 445 degrees Fahrenheit) will result in at least an additional 20 to 30 percent reduction in volatile metallic compounds previously not absorbed onto particulates. It is not clear whether emissions of mercury and mercuric compounds will be controlled to a significant degree by fabric filter systems. However, recent data indicate that mercuric compounds are controlled to a limited extent by a dry scrubber and baghouse combination (California Air Resources Board. May 24, 1984. Air Pollution Control at Resource Recovery Facilities).

## Water Quality And Pollution Control Technologies

MSW combustion facilities can potentially impact water quality in several ways. If not properly controlled, pollutants can potentially enter groundwater and surface water directly through discharge of contaminated process water or indirectly through air emissions, surface runoff, and ash residue leachate if combustion ash is disposed of in landfills. Water is used for a number of purposes at MSW combustion facilities. Significant quantities of water are required in the combustion process for boiler blow-down, equipment cleaning, tipping floor cleaning, and ash quenching. However, much of the water used in modern WTE facilities is recycled. Only limited quantities are actually discharged. The Lancaster, Pennsylvania, WTE facility, scheduled to begin operations in 1991, reuses all of its wastewater on-site. The Lancaster County facility, as well as several other WTE facilities, use effluent from municipal wastewater treatment plants as makeup water for cooling towers.

Wastewater discharges from any MSW combustion facility must meet all applicable industrial pretreatment standards for discharge into sanitary sewers or will have to be in compliance with a National Pollutant Discharge Elimination System (NPDES) permit for discharge into a natural waterway. Pretreatment of wastewater may be required to meet both current and potentially stricter discharge limitations.

Potential indirect impacts to surface water from air emissions and runoff can be controlled through the application of appropriate air pollution control technology and good grounds and housekeeping practices, which minimize the introduction of potential contaminants to runoff-producing media. Dispersion of pollutants in the air would further limit the potential impact to surface water quality from this source.

Potential impacts to groundwater result from ash disposal in landfills. Tests conducted on ash from MSW combustors have revealed elevated concentrations of heavy metals and other compounds, such as dioxin. In Illinois, ash from the combustion of MSW is currently classified as a special waste. As such, it requires disposal in specially designed landfills with design features for minimizing the potential migration of pollutants into groundwater. The potential for migration of metals from ash disposed of in monofills is currently receiving much critical attention. Recent test results from a study sponsored by USEPA and the Coalition on Resource Recovery and the Environment (CORRE) on leachate from five ash monofills showed metals concentrations in the leachate that "were close to drinking water standards." However, other studies have shown higher metals concentrations in leachate from ash monofills. Discussions of the analytical methods used in characterizing ash leachate from landfills and associated regulatory issues are presented in the following subsection on residue management.

#### Residue (Ash) Management

Ash residue is cumulatively defined as bottom ash, siftings, and fly ash. These residues are collected in hoppers at the bottoms of the boiler, economizer, air heater, and air pollution control equipment at WTE facilities. This residual material can be described as essentially inert solid matter that remains following the combustion of MSW. Siftings, more commonly referred to as bottom ash, fall through grate openings and accumulate in hoppers below the combustion unit. Bottom ash also discharges from the end of the furnace stoking grate (or rotary kiln, depending on the combustion method used) into a hopper for collection. Fly ash is small particulate matter that remains in suspension with the flue gas that exits the combustor to be collected by air pollution control equipment.

As part of the development of a WTE facility, measures to ensure environmentally sound management of combustion residues would need to be included in the project. The principal concern regarding ash residue relates to the nature and control of leachate from landfills in which residue is disposed. Most of the environmental concern about ash residue focuses on the amounts of heavy metals (e.g., lead, cadmium, and mercury) in the residue and the potential for these constituents to leach and contaminate the environment. These heavy metal constituents exist in the incoming wastestream to a WTE facility. However, through combustion, the volume of the processed wastestream is greatly reduced, thereby increasing the relative concentrations of noncombusted residuals, including heavy metals.

Studies of leachate from ash residue landfills have shown levels of heavy metals in leachate to be relatively low. For example, in a report to Congress, USEPA, following approved sampling and analysis protocol, analyzed leachate from several ash residue disposal facilities and in each case the leachate did not violate any of the allowable limits for USEPA's extraction procedure (EP) toxicity test (USEPA. October 1987. Landfills, Monofills and Co-Disposal Sites).

Despite the results of this and similar research, sound environmental management requires that any leachate generated from residue disposal should be collected and processed. Accordingly, the disposal of combustion ash residue should be restricted to specially designed monofills that would accept only residue. In addition, a monofill should include a clay and a synthetic liner system, a leachate collection and management system, and a groundwater monitoring system. This approach, while being environmentally responsible, also appears to readily meet the likely directions of pending state and federal regulations for combustion ash residue management.

In addition to providing for the proper disposal of combustion residue, the proper management of ash during transportation for disposal is required. For example, in accordance with guidelines recently issued by IEPA, vehicles hauling ash residue must be covered and adequately sealed to prevent spillage of quench water, which drains from the residues. Development of a thorough plan for residue management is an essential aspect of WTE facility permitting with IEPA.

The physical and chemical composition of ash residue from an MSW combustor and accompanying particulate removal system are highly dependent on the type of material being charged through the system, the type of combustion unit used, and the combustion efficiency (i.e., thoroughness of the combustion process) of the unit. Additionally, the use of a gas scrubber introduces lime or calcium into the ash, which affects the composition of the combined total residue. Seasonal, geographic, and socio-economic variations that affect the amount and composition of raw MSW introduced into the system also affect the physical and chemical characteristics of ash residue. Therefore, ash residue composition will not be consistent from facility to facility nor necessarily from season to season within the same facility.

Bottom ash typically consists of ferrous and nonferrous metals, glass, ceramics, minerals, and ash. As with the physical composition of bottom ash, the chemical composition is also dependent on processed waste composition, the type of combustion process, and combustion efficiency. The carbon content, which is related to the extent of combustion, similarly affects the overall composition of the ash.

There is presently considerable interest, research, and concern regarding the concentration of metals that can exist in combustion ash residue and the possible environmental impacts of these materials. Such concerns are generally greater for fly ash,

which tends to exhibit higher levels of certain metals than bottom ash.

The volume of ash residue remaining after combustion is typically 5 to 15 percent of the waste fed to a mass firing WTE facility. By weight, the amount of ash residue from combustion of MSW solid waste is approximately 20 to 40 percent, on a wet basis, of the unprocessed waste weight. Recycling activities (as required by IEPA in its permit requirements for the Robbins Resource Recovery facility) could result in significant reductions in ash generation. If ferrous materials are recovered from the residue, the amount of residue requiring disposal would be further reduced. Ferrous metals account for approximately 5 to 15 percent by weight of total residues produced. This residue includes bottom ash and fly ash, which contain toxic organic compounds and metals. Disposal of ash residue in an environmentally sound manner is a major concern in operating a WTE facility because of the capability of the organic compounds and heavy metals in the ash to migrate from landfills and contaminate groundwater.

Two approaches have historically been taken in evaluating ash quality characteristics. One approach had been directed at developing a realistic characterization of the leachate produced by natural percolation of water through an ashfill. A second, more conservative approach had been to assess ash quality using extraction procedure (EP) toxicity tests and standards. However, on March 29, 1990, USEPA promulgated a regulation (55 CFR 11862) that established a new analytical method, the toxicity characteristics leaching procedure (TCLP), for characterizing leachate.

The EP toxicity procedure evaluates the toxicity of a material under specified aggressive chemical conditions, including the maintenance of an acidic (pH of approximately 5) environment. As will be discussed, the leaching of contaminants from ash, and

particularly heavy metals, is quite sensitive to pH. Although there was some expectation that the TCLP method would be more aggressive than the EP toxicity test in leaching contaminants, testing conducted on ash from the Westchester County, New York, and Marion, Oregon, facilities suggests that the TCLP test is comparable and perhaps slightly less aggressive than the EP toxicity test (New York State Department of Environmental Conservation. 1987; Schinn. 1987). As stated previously, recent test results from a study sponsored by USEPA and CORRE using TCLP on leachate from five ash monofills revealed metals concentrations in leachate that "were close to drinking water standards." However, a significant difference between EP toxicity and TCLP procedures is that the latter includes consideration of many more constituents, including dioxins. Therefore, the disposal of ash residue will need to be scrutinized with respect to the potential threat to human health and the environment posed by the chemical parameters identified using the TCLP procedure.

Illinois law currently allows for the combined disposal of fly ash and bottom ash. However, MSW combustion ash is currently classified as a special waste in Illinois. Therefore, ash residue can only be placed in a special waste landfill permitted to accept ash. Special waste permits disposal are granted on a component-specific basis. By siting a WTE facility and associated residue disposal facility close to each other, the costs of residue hauling can be reduced, and concerns about the environmental impacts of residue transport can be minimized. The minimum criteria for determining suitability of an ash landfill (ashfill) site are geologic suitability, setback distance from public wells, and location to floodplain or ability to be flood-proofed. These criteria are established by federal and state regulations. Additionally, local criteria would need to be developed for the selection process. Sites that meet the minimum state-mandated criteria would then be analyzed and ranked on the basis of satisfying local siting criteria.

The separate disposal of ash in a monofill offers several advantages. Problems that may exist in municipal landfills, such as the generation of explosive gases, are not present in a monofill due to the inert characteristics of ash. In addition, comparison of leachate quality from sanitary landfills and ashfills shows that leachate from mixed solid waste exhibits higher levels of certain pollutants, including heavy metals, than leachate from equal weights of ash only. This is explained largely by the absence, in an ash monofill, of the acids produced through the decomposition of MSW. Also, ash is more alkaline than solid waste due to the presence of lime from the scrubbing process. Heavy metals have lower solubilities within the normal range of alkalinity found in ash and, therefore, undergo less leaching.

As with a state-of-the-art sanitary landfill, an ashfill must be designed to prevent leachate from having an adverse impact on local groundwater quality. However, environmental risks associated with the land disposal of solid waste are substantially reduced through the disposal of ash residues in a monofill or separate cells of a sanitary landfill.

#### Odor And Control Technologies

The potential for odor emissions and resulting impacts to surrounding land uses is an important issue in the siting and operation of solid waste combustion facilities. The implementation of appropriate odor control techniques in the design and operation of a WTE facility is usually highly effective, in preventing the migration of odors beyond facility boundaries.

Objectionable odors generally form when MSW is left unprocessed for more than one day. Additionally, excessively wet solid waste has the potential to generate odors associated with anaerobic decomposition. Unless the delivered waste is stale or excessively wet, the formation of odors would not be expected

inside a facility because the daily combustion of waste would occur soon after the waste was received and before significant decomposition had begun.

The generation of odors caused by stale waste inside a combustion facility is also reduced by process systems inherent to combustion facilities. Waste handling occurs inside a closed structure, which prevents additional moisture from reaching the waste and air needed for combustion furnaces is drawn from inside the facility through the facility's boilers to create a slight negative pressure. The odors would be destroyed as air passes through the combustion process prior to leaving the emissions stack. Finally, even if not all furnaces were firing and refuse was being stored in the storage pit, ventilation of the facility would be maintained by induced draft fans. Under these conditions, any captured odorous gases would be directed into the stacks and released at an elevation that facilitates dispersion. Because of these processes, odor migration is not normally a problem at modern WTE facilities.

#### Noise and Control Processes

The siting of WTE facilities requires consideration of potential noise impacts to surrounding areas. The primary sources of noise from a WTE facility include the construction activities for the facility, operation of the facility, and facility-generated traffic.

The primary sources of construction noise would be from operation of diesel engines and pneumatic powered on-site construction equipment. Operation of construction equipment is normally limited to daytime hours and required to comply with local ordinances.

The major sources of operational noise are induced draft

fans, tipping hall activities inside the facility, and mechanical draft cooling towers. Other sources of noise, such as transformers, ventilation fans, material conveyors, loud speakers, and steam reliefs are relatively insignificant and do not normally increase the overall noise level above that produced by the major operational sources.

The truck traffic generated by a WTE facility can increase surrounding traffic noise levels. However, any increase in traffic noise would normally be limited to daytime working hours.

There are no federal noise regulations that apply to the operation of WTE facilities. Therefore, only state regulations and local ordinances would apply. State regulations and local ordinances that would apply include Illinois Pollution Control Board noise regulations and noise standards contained in the performance standards section for local zoning ordinances.

### Traffic

Siting a WTE facility requires a detailed analysis of the short and long-term traffic impacts caused by the facility. These impacts will primarily result in an increased concentration of truck traffic. Proper planning and traffic management are integral to ensuring safe traffic flow in the vicinity of a combustion facility.

On a county-wide basis, a new solid waste facility would not be creating new traffic but rather, would represent a diversion of existing traffic. On a local basis, most of the solid waste traffic is traveling to and from Mallard Lake Landfill, near Bloomingdale, and Greene Valley Landfill, near Woodridge. A WTE facility, sized for DuPage County alone, would actually decrease the number of solid waste transportation vehicles presently using the roadways network in DuPage County because less solid waste will

ultimately be coming from communities outside of DuPage County than presently occurs.

### SITING CONSIDERATIONS

In addition to the environmental issues discussed above having an impact on the siting of a WTE facility, the considerations of energy markets for the use of the energy produced by the WTE facility and other issues related to siting must also be considered as potential sites are evaluated.

### Energy Market Considerations

The sale of energy products is vitally important to the economic viability of any waste-to-energy project. Energy revenues, along with tipping fees comprise the income that enables a facility to retire its capital debt, as well as to meet its operating and maintenance expenses. By maximizing revenues from the sale of energy, a waste-to-energy plant minimizes the remaining costs which must be generated by charges for waste disposal services.

Types of energy that can be sold directly by a waste-to-energy plant include thermal products (i.e., steam, hot water, and chilled water) and electricity. A plant can be designed to produce only thermal products, only electricity, or through cogeneration, a combination of the two. Also, rather than selling energy directly, a resource recovery facility can produce a refuse-derived fuel (RDF) for sale and subsequent combustion alone or with other fuels to produce thermal energy and/or electricity. Detailed investigations of available energy markets must be made to determine the best choice of energy products to be produced at a particular facility.

The key factors to be considered in selecting an energy

market for a waste-to-energy plant are the types of energy to be produced and the particular customers to whom these products should be sold. In evaluating alternative energy markets the overriding objective should be to maximize the economic benefits that accrue from the sale of energy. This objective can generally be met by finding energy markets which:

1. Provide the highest possible revenues from the sale of energy;
2. Offer long-term stability of these market sales; and
3. Minimize incremental transport costs.

Revenues from the sale of energy are maximized by finding a market that will offer the best combination of energy price and volume of sales. Thermal markets, in particular, may have difficulty offering the constant, year-round demand needed to maximize energy revenues. Conversely, electric utilities are required to purchase all electricity produced by facilities which qualify for the benefits of the Public Utilities Regulatory Policies Act (PURPA), but the low prices offered by many utilities, including Commonwealth Edison, adversely affect the economic viability of this option. A "Qualifying Facility" (QF) is a cogeneration facility or a small power production facility which meets the criteria set forth in Subpart B or 18 CFR 292.

The long-term stability of energy markets is influenced by the willingness of energy customers to enter into firm long-term contracts for the purchase of fixed amounts of energy and by the underlying long-term financial stability of the customer firm or institution. Generally, private businesses are hesitant to enter long-term contracts for energy purchases. Even when they do, the long-term existence of most private firms is not as secure as that of governmental entities or electric utilities.

In areas of the country where prices offered by utilities for the purchase of electricity are low, such as Illinois, there is

strong economic incentive to develop a market for steam or hot water, rather than electricity. For example, considering the price of competing fuels, a reasonable assumed price for steam sales would be approximately \$6.00 per thousand pounds of steam. If each ton of solid waste is assumed to produce approximately 5,600 pounds of exportable (i.e., not required for in-plant usage) steam, and all of the exportable steam is sold, then each ton of waste will produce approximately \$33.60 steam sales revenues. On the other hand, if the steam from incineration is used to generate electricity rather than sold as steam, approximately 550 kwh of exportable electricity can be generated from each ton of solid waste. At Commonwealth Edison's current average purchase of 1.79 cent/kwh, each ton of waste would produce approximately \$9.85 of revenue. This is considerably less than the \$33.60 per ton estimate of revenues from steam sales. However, as mentioned earlier, estimates of revenues from steam sales must be adjusted to reflect the percentage of exportable steam that is actually sold rather than produced, whereas under current Federal and State law, utilities are required to purchase virtually all electricity generated by waste-to-energy plants.

Generally, transportation costs of collecting and hauling wastes comprise approximately 75-80% of the total cost of solid waste disposal services. Therefore, it is important that the evaluation of potential energy markets consider the impacts of alternative markets on facility siting, and associated impacts to waste collection and hauling costs in communities served by the facility.

#### Thermal Energy Markets

Thermal energy products of a waste-to-energy facility can include steam, hot water, and chilled water. The selection of energy forms to be sold depends primarily on the energy needs of prospective customers.

Unless thermal sales are made to an existing district heating system, a system of distribution pipes must be constructed to transport steam, hot water, or chilled water from the resource recovery plant to customer facilities. The costs of a distribution network can be expensive, particularly in densely populated urban areas or where major natural or man-made (e.g. a river or highway) obstacles must be traversed. Therefore, the relative proximity of individual customers to the waste-to-energy plant is an important consideration when evaluating thermal energy markets.

Two key determinants of the economic viability of a thermal energy market are its size and stability. Energy loads should be sufficiently large to accept virtually all of the thermal energy that the waste-to-energy plant can produce, as close as possible to 24 hours per day, 365 days per year. Generally, the best thermal markets are large manufacturers who operate around the clock throughout the year, and require large quantities of steam or hot water in their processes. Due to their diurnal and seasonal fluctuations, space heating loads usually do not present an economically attractive energy market. An exception could occur if space heating loads could be coupled with space cooling loads, via absorption chilling, to form a steady overall energy demand.

Section 13.0 of Appendix A-4 summarizes the process which was followed in previous solid waste planning efforts by the County to identify potential thermal markets for WTE facilities.

#### Electrical Energy Markets

Unlike steam, electricity is an energy form which is used by virtually every resident and business within a community. Thus, on first glance any home or business would appear to be a potential electric customer of a waste-to-energy facility. However, various technical, legal, and economic factors greatly restrict the markets that are actually available for the sale of electricity from a

waste-to-energy plant.

The principal markets available for electric sales include municipal or privately-owned electric utilities; other electricity-consuming facilities owned by the owner of the waste-to-energy facility; and other industries or institutions. Following is a discussion of the principal issues involved in the evaluation of the feasibility of each of these markets for electricity.

1. Electric sales to a utility. Electric sale to a utility is, by far, the predominant choice of most electric-generating waste-to-energy plants built in the U.S. Under the Public Utilities Regulatory Policies Act (PURPA) adopted by Congress in 1974, electric utilities are obligated to purchase electricity offered for sale to them by cogeneration and small power producers, such as waste-to-energy facilities. Under PURPA, utilities are required to purchase such power at a price equal to their "avoided costs" or the costs which the utility is able to avoid by not generating or purchasing the same power from other available sources.

The strength of an electric utility as an energy market lies in its ability to absorb all of the electricity offered for sale, and in the long-term stability of energy revenues that a utility provides. Typically, a waste-to-energy facility provides only a small portion of the power requirements of a large electric utility. Therefore, the amount of electricity sold by a waste-to-energy plant depends only on the generating capacity of the plant and its availability rather than on the electric needs of the utility itself. Most non-utility businesses are reluctant to enter into long-term agreements for the purchase of energy. Even when they do, the value of such agreements is influenced by the financial stability of the firm. However, utilities, which have a State-prescribed service area and are ensured through the regulatory process at least a minimal level of financial health, provide a level of market stability difficult to match with most other firms, or even most public institutions.

The greatest disadvantage to selling electricity to an electric utility is the low price that usually accompanies such sales. This is particularly true in states such as Illinois where utilities have substantial excess generating capacity, which depresses the "avoided

cost" price offered to cogenerators and small power producers.

Public Act 85-882 is an attempt by the State of Illinois to encourage public utilities to purchase cogenerated waste-to-energy power at a rate equal to the average per kilowatt-hour paid from time to time by the unit or units of local government owning the facilities, excluding amounts paid for street lighting and pumping service. This effectively increases the value of electricity to higher than the estimated avoided costs. However, when a public utility is required to purchase electricity under this law, it (the utility) is entitled to certain credits and reimbursement of payment of costs, expenses, losses, damages or other amounts incurred by the utility or for which it becomes liable for not acquiring electricity from other sources. The credit(s) are determined by the utility.

Once a qualified facility has satisfied, in full, its capital costs and/or indebtedness incurred from developing such a facility, the facility is required to pay back the Public Utility Fund for the utility's participation in the project. Therefore, the individual facilities will subsidize higher electricity payments from the utility to a project and will be liable to reimburse the utility fully for its participation and associated costs in the project. This would have an adverse effect on the economics of proposed facilities forcing service fees charged to communities to be raised to cover the cost(s) of the utility's participation in a project.

2. Uses of electricity at other self-owned facilities.  
The price paid for electricity by customers of a utility are virtually always substantially higher than the "avoided cost" price paid by utilities. Therefore, electricity has a higher value to the owner of a waste-to-energy plant, either for use at that plant or at other facilities, than for sale to the utility. Waste-to-energy plants with electric generating equipment are typically designed to meet all of their own power requirements with self-generated capacity. Excess power can, in theory, be used to meet electric requirements at other adjacent or remote facilities. For example, public offices, wastewater treatment plants, water pumping stations and other numerous public uses could receive power from a publicly owned waste-to-energy plant. However, such applications would require that power be "wheeled" from the waste-to-energy plant to receiving facilities, using the existing electric transmission systems of the local utility. Electric utilities in Illinois, and in most other locations across the country

as well, have been reluctant to provide wheeling services, particularly at rates that make it an economically attractive system. Thus, although the use of energy from a waste-to-energy plant at other County or municipally owned facilities is conceptually appealing, unless such facilities are adjacent to the waste-to-energy plant, the difficulty of obtaining economical wheeling services greatly reduces the feasibility of such an option.

3. Electric sales to non-utility industries/institutions. Because prices paid for electricity by business and institutions exceed the "avoided cost" prices offered by utilities, the sale of electricity to these establishments appears potentially more promising than sale to an electric utility. However, significant impediments to the sale of electricity to parties other than an electric utility include the following:

Variability of demand. It is extremely difficult to continuously match the electric output from a waste-to-energy plant to the fluctuating instantaneous demand profile of an individual customer. Unlike thermal demands which usually vary slowly, electric power requirements can vary abruptly, as equipment is switched on or off.

Need for back-up and/or supplemental power. Most customers will continue to require connection to the utility for back-up and/or supplemental power. Charges for these services by the utility will decrease the savings which the customer can realize from the purchase of electricity from alternative sources, thereby reducing the price at which electricity can be sold from a waste-to-energy facility. Additionally, some utilities have taken the position that although under PURPA they are required to provide back-up and supplemental power to "qualifying facilities" they are not required to do so, and will not, for customers of the qualifying facilities.

Unavailability of wheeling. As discussed earlier, existing state and federal laws, as presently interpreted by regulatory agencies and the courts, makes the availability of economic wheeling services uncertain at best. Therefore, potential electric markets for a waste-to-energy facility must be adjacent to the facility and not require wheeling by the utility.

Possible regulation as a public utility. Under Article II, Section 3-105 of the Illinois Public Utilities Act, any company which sells electricity (except as otherwise allowed by PURPA) is classified as a public utility and

subject to regulation as such. Classification as an electric utility would put the owner of a waste-to-energy facility in conflict with the service area franchise of the existing public utility. However, the generation, transmission and sale of electricity by a facility that is owned by a municipality or other political subdivision is not subject to regulation as a public utility.

Section 14.0 of Appendix A-4 describes the process which was used during previous solid waste planning efforts to identify potential electrical energy markets in the county.

#### Other Siting Considerations

The consideration of a waste-to-energy facility should be carefully considered in order to meet the expected goals for the provision of the facility. In the preceding subsections, the provision of waste-to-energy facilities which include the combustion facility on-site as well as projects which anticipate the shipment of prepared fuel off-site for combustion have been discussed.

For projects which assume the combustion component to occur on-site, the availability and proximity to an energy market must be considered along with all of the other normal site traits which are considered for other waste projects. The availability and proximity of energy markets must be considered in order to provide the added cost benefits associated with waste-to-energy projects. Although a combustion facility can be constructed without the ability to recover energy, the tipping fees expected to be charged at such a facility will be substantially greater than at a comparable facility which recovers energy for sale. Further, "incineration with energy recovery" is one step higher than "incineration without energy recovery" in the State of Illinois' preferred waste management hierarchy.

For projects which assume the combustion of fuel off-site

after the preparation of such a fuel by the processing of waste, the transport system to the location of combustion must be considered. Actually, site considerations under this scenario mimic those discussed both in Appendix A-3 for materials recovery facilities as well as those discussed for transfer facilities in Appendix A-4.

This subsection provides a discussion of general items which should be considered when evaluating sites for the placement of a waste-to-energy facility.

#### Number Of Facilities

This consideration, although not really a site consideration, is very important when considering waste-to-energy projects because of the large developmental and capital costs such projects represent as well as the continued costs for environmental monitoring such facilities will have to assume for the life of the project. The financial undertaking to finance a waste-to-energy facility will often drive project sponsors to consider only one such facility in a given area. The advisability for placement of multiple facilities in a given planning area must be carefully considered after examining the actual needs for the area and considering the costs for development of multiple projects. Unless very enhanced market conditions exist for the placement of multiple facilities, it can be anticipated that the construction of multiple facilities will be cost-prohibitive.

#### Land Requirements And Availability

The amount of land required will be dependent on the size of the facility to be constructed; the amount of buffer area desired in order to minimize the visual impacts to the surrounding area; and to some extent on the proximity to and the type of energy market proposed. In previous planning efforts, the County has

proposed sites for the placement of waste-to-energy facilities on the order of 25 acres in size. Additional acreage would provide additional site buffer.

Site availability is a critical consideration for waste-to-energy facilities because they are usually so dependent on energy market locations. An otherwise preferable market for the sale of energy produced by the facility may be impractical if land is not available in the vicinity for the placement of the waste-to-energy facility.

#### Transportation Accessibility

As with other waste management facilities, the accessibility to major transportation routes must be considered. It is advisable to locate the facility on or near major highways or interchanges. The siting of a facility on a rail line can be advantageous for the potential use of rail transport for the disposal of residue at a distant site if a local disposal site is unavailable.

#### Proximity To Utilities

The utilities required for a waste-to-energy facility include telephone, sewer, electric, water, and natural gas. Selection of a site where the utilities are readily available is preferred as the cost of extending utilities to a site can be substantial.

#### Site Subsurface Conditions

Waste-to-energy facilities employ large buildings for the receipt and processing of waste. The equipment in such facilities is large and heavy and requires stable soils for foundations. The facilities almost always (except for modular facilities) use waste pits for the storage of waste prior to combustion. Therefore, groundwater conditions and the depth of bedrock underlying the site

must be considered within the context of construction cost impacts.

#### Land Use Compatability

When considering potential impacts of siting a WTE facility, it is essential that the compatibility of the facility with surrounding land uses be carefully addressed. This compatibility is best addressed by selecting a site that does not inherently conflict with existing and future land uses and applicable zoning regulations and then designing the facility with thorough attention to the features that primarily determine how an individual facility relates to its surroundings (e.g., consistent land use, environmental suitability, and facility identity).

Land use characteristics that should be addressed when siting a WTE facility irrespective of its design features include zoning, existing and future land use, floodplain impacts, wetlands impacts, unique and sensitive natural areas impacts, and impacts on aesthetics. In general, it is desirable to locate combustion facilities in industrial areas or next to existing solid waste management facilities. Proximity to other types of land uses generally requires increased emphasis on land buffers, visual screening, and architectural treatment.

#### 3.3.2.3 Costs

Construction of a WTE facility would be expected to cause a rise in waste disposal costs above current costs of landfilling in DuPage County. However, the cost difference between a WTE facility and sanitary landfill would decrease over time. Eventually, as existing landfill space is depleted and expensive replacement landfill capacity would need to be developed, the costs of disposal at a WTE facility would be expected to be lower than landfilling. In fact, in some areas of the eastern United States, where remaining landfill space is scarce and long haul distances are

required, the costs of continued disposal of MSW in landfills has already exceeded the cost of waste processing at WTE facilities.

Thorough economic analysis of MSW combustion facilities is essential to properly evaluate their potential contribution as part of an overall MSW management plan. The costs to design, construct, and operate WTE facilities are variable and depend, among other things, on the specific technology and equipment selected, environmental setting, regulatory environment, quantity and quality of the MSW to be processed, cost of land, the market for energy generated by the facility and energy and delivery systems, taxes, degree of redundancy, method of procurement, and financing and ownership options that are pursued. The following sections discuss typical capital and operating costs as well as revenues of MSW combustion facilities.

#### CAPITAL COSTS

The typical capital costs of a WTE facility include the following:

- o Equipment (receiving and storage, combustion and steam generation, power generation, condensing and cooling);
- o Building, foundation, and site work;
- o Land;
- o Planning, financial, engineering, and legal services;
- o Spare parts;
- o Interest during construction; and
- o Contingencies.

The capital cost of a WTE facility is highly dependent on the specific circumstances and requirements associated with the given application. However, a good rule-of-thumb for most applications of mass firing waterwall combustion or combined RDF production and

combustion is that the construction costs (exclusive of land and project development costs) for a new facility can be expected to be approximately \$100,000 per tpd of installed capacity. This cost has been relatively constant in recent years. Using a budget figure of \$100,000 per tpd, a 1,000 tpd facility would cost \$100 million.

In a cross-technology comparison of capital costs, modular mass firing units tend to cost significantly less than field-erected mass firing and RDF combustion facilities. However, offsetting the lower capital cost of the modular units are higher operating costs and shorter expected operating lives. The capital cost of RDF facilities is highly dependent on the degree of processing and redundancy incorporated into the facility; the additional equipment required to process prepared fuel generally pushes the total capital cost of RDF facilities over that of similarly sized mass firing facilities. However, considering their material recovery potential, RDF facilities can sometimes be more competitive on an overall cost-per-ton basis.

#### OPERATING COSTS AND REVENUES

The costs to operate a WTE facility typically include the following labor; maintenance; materials; power and fuel; water; sewers; management, overhead, and profit; power payment to vendor (i.e., share of energy revenues); residue hauling and disposal; administration by owner; and host community benefits. These costs are in addition to the amortization of the facility's capital costs.

Revenues that will partially offset these costs are generated by the sale of electricity and steam; ferrous materials; and other recovered materials.

Revenues are also generated by charging tipping fees to

haulers that deliver waste to the facility. Net disposal costs for a new WTE facility can generally be expected to fall in the range of \$40 to \$60 per ton. However, this value is highly dependent on available energy resources and the particulars of project financing.

### 3.3.3 Landfill Options

As the Review Draft version of Plan-1990 was being prepared the Illinois Pollution Control Board (IPCB) was in the process of completing amendments to the State regulations addressing solid waste disposal practices. On August 17, 1990 the IPCB completed Proceeding R88-7 which made broad and sweeping changes in the regulations for solid waste disposal in Illinois. The Review Draft of Plan-1990 noted that the text did not incorporate possible changes in siting, design and operation of landfills that might be required by R88-7 and that the final version of Plan-1990 would be reviewed for consistency with revised regulations. A consistency review has been performed and the current text considers the effects of R88-7.

The amendments to State landfill regulations apply to all municipal and industrial landfills in Illinois. The regulations use a mix of performance and minimum design standards. Significant new regulations include:

1. Interrelated systems of checks and balances to control transport of contaminants, including a stringent groundwater assessment program;
2. Liners of compacted earth, or compacted earth and geomembrane;
3. Leachate collection systems;
4. State of the art leachate treatment and disposal requirements;
5. Landfill gas monitoring and management;

6. Detailed construction and operating oversight requirements;
7. Post-closure care for as many years as is necessary at each landfill to demonstrate that contamination is no longer a problem;
8. A groundwater monitoring system designed to quickly detect potential problems, and to trigger prompt remedial action where indicated;
9. Built-in provisions to avoid sensitive areas ranging from airports to nature preserves;
10. More intensive permitting and reporting requirements; and
11. Phase out of existing landfills timed to the level of compliance with the new regulations.

The regulations added six new parts to the IPCB's regulations for waste disposal. Part 810 contains the definitions; Part 811 describes the design and performance standards for new landfills; Part 812 prescribes the information necessary in a permit application; Part 813 contains procedures for permitting; Part 814 describes phase-in standards for existing landfills; and Part 815 contains procedural requirements for facilities exempt from permitting requirements. Among some of the new provisions are the following highlights:

**Waste Categories:** Categories based upon physical and chemical properties of wastes are established. Inert waste will not burn, biodegrade, serve as food for vectors, form a gas, cause an odor, or produce a contaminated leachate. Chemical waste is defined as waste that will form a contaminated leachate by chemical or physical processes. Putrescible waste will form a contaminated leachate by biological, chemical or physical means. Municipal waste is considered putrescible waste by definition and must be placed in a sanitary landfill.

**Location Standards:** Location standards will restrict the location of landfills to areas where they will not invade the scenic or recreational values of rivers; restrict or reduce the temporary water storage capacity of a 100-year floodplain; jeopardize nature preserves or any endangered wildlife; threaten or destroy irreplaceable historical and archeological sites; invade a wetland; or cause water

pollution. Additional location standards for facilities accepting putrescible and chemical wastes include setback zones from airports, highways, homes, drinking water supplies, and sole-source aquifers.

**Surface Water Drainage:** Standards are proposed to insure that rainfall runoff that comes into contact with disturbed landfill areas does not pollute surface water.

**Postclosure Maintenance Standards:** A monitoring period is established for a minimum of 15 years after closure. The monitoring period continues until the waste is stabilized and the operator can assure that the landfill will not cause any pollution.

**Determination of Contaminated Leachate:** Criteria for testing is outlined to determine whether the leachate expected to be formed by a waste is contaminated.

**Foundation and Mass Stability Analysis:** The operator is required to analyze the foundation soils beneath a landfill to determine the bearing capacity and susceptibility to landslides.

**Liner Systems:** Minimum criteria are specified.

**Standards for the Leachate Drainage, Collection, Treatment, and Disposal Systems:** All landfills must be equipped with a leachate collection system and the operator must operate the system and safely dispose of treated leachate.

**Landfill Gas Monitoring and Management:** All landfills must be monitored for excess landfill gas migration.

**Standards for the Final Cover System:** All landfills must be covered with an earth layer three feet thick compacted to the density necessary to achieve a hydraulic conductivity no greater than  $1 \times 10^{-7}$  cm/sec. (1.24 inches/yr.) A final protective layer of soil capable of supporting vegetation three feet thick will overlay the compacted earth cover.

**Hydrogeologic Site Investigations:** A three phase investigation procedure is specified.

**Groundwater Protection:** The regulations introduce a new method of setting groundwater monitoring standards which ties the site characteristics, design, operation and monitoring into an integrated system.

**Groundwater Quality Standards:** The groundwater standards are based upon the existing quality of groundwater.

**Construction Quality Assurance:** The operator will be required to institute a construction quality assurance program for all structures at a landfill, including the liner, cover, leachate collection system, and any berms and dikes. All aspects of construction must be inspected and tested under the supervision of a designated construction quality assurance officer, who prepares an acceptance report.

**Financial Assurance for Closure and Postclosure Care:** The operator of a landfill is required to give financial assurance for a postclosure care period estimated at thirty years.

**Term of Permit:** A permit must be renewed every five years.

**Authorization to Engage in Experimental Practices:** This procedure allows the operator to try new materials and techniques that may require an entirely different set of standards than those specified by regulation.

**Acceptance Reports:** Before placing a structure into use, the Illinois Environmental Protection Agency (IEPA) reviews the acceptance report submitted by the construction quality assurance officer to ensure that it has been built in accordance with the approved design.

**Annual Reports:** All operators must submit as a minimum, an annual report to the IEPA.

**Existing Facilities:** Existing facilities are divided up into three general groups: facilities that may remain open beyond seven years, facilities that will close within seven years of the effective date of these regulations, and facilities which are either unable to demonstrate compliance with the requirements of the first two categories, or are scheduled to close within two years of the effective date of these regulations. Facilities in this last category must close within two years of the effective date of these regulations under their existing permits, in accordance with the terms of their existing permit.

**Reporting Requirements for Onsite facilities:** Part 815 describes the information that must be filed with the IEPA by facilities exempt from permit requirements under Section 21 (d) of the Act. Facilities would be required to file an initial facility report with the IEPA, describing the facility layout and design, annual reports, and quarterly groundwater monitoring reports.

### 3.3.3.1 Overview of Design And Operating Components

#### DESIGN COMPONENTS

Because of past practices the public often perceives landfills as "garbage dumps". Today's modern sanitary landfill design departs significantly from the manner in which garbage was disposed in the past. A general description of design components at facilities historically used for garbage disposal is worthwhile in order to illustrate the difference in today's modern design facilities.

Historically, landfills were located on low-cost land, usually in floodplains or wetlands. Therefore, underlying soil provided no barrier to the release of contaminants to surrounding groundwater. Further, the installation of liner systems in the bottom of the landfill was not conducted, further increasing the risk for contaminant release. Likewise, systems for the collection of leachate and methane gas were not installed. Adequate cover material was rarely placed and this resulted in severe erosion with exposed garbage. Groundwater monitoring was usually not provided.

During project design for a modern sanitary landfill the design engineer would develop a landfill design which incorporates the regulatory requirements with any site-specific environmental characteristics requiring special considerations. The design components may exceed or deviate in a positive direction from the regulatory standards, but would not fall below minimum design requirements. In instances where no regulatory standards exist, the design engineer would use professional judgement with respect to available technology.

The design components described here will be discussed in general terms and at standards equal to those required by regulation. However, specific design components would be

determined by each site's environmental characteristics as well as restrictions imposed by the local siting authority during its review. These variables may create more stringent design standards than described herein.

The design requirements discussed here conform to the requirements of Part 811 (Standards For New Solid Waste Landfills) of State regulations for solid waste disposal. The standards required for putrescible and chemical waste landfills establish the context for requirements discussed here.

The principal design components affecting the construction of a new landfill include:

1. Design Period;
2. Foundation and Mass Stability Analysis;
3. Foundation Construction;
4. Liner Systems;
5. Leachate Drainage Systems;
6. Leachate Collection Systems;
7. Leachate Treatment and Disposal Systems;
8. Landfill Gas Management Systems;
9. Landfill Gas Processing and Disposal Systems;
10. Groundwater Monitoring Systems; and
11. Surface Water Drainage.

### Design Period

The design period of a site is the defined period for which constructed appurtenances of the facilities are expected to be in service. In other words, the design period defines the minimum expected time which the facility must be cared for.

The regulatory design period for putrescible and chemical waste disposal units is the estimated operating life plus 30 years unless measures are undertaken to encourage the stabilization of putrescible waste. Allowable regulatory stabilization practices include the acceptance of putrescible waste only in shredded form or the recirculation of leachate either of which can reduce the

regulatory design period to the operating life plus 20 years.

### Foundation And Mass Stability Analysis And Foundation Construction

Illinois regulations require that the material below a waste disposal unit shall have sufficient strength to support the weight of the waste disposal unit during all phases of construction and operation. Also, the loads and loading rate shall not cause or contribute to the failure of the liner leachate collection system. In calculating the factors of safety for bearing capacity and slope failure, both long term (in tens or hundreds of years) and short term (over the design period of the facility) conditions should be considered. The potential for earthquake or blast induced liquefaction, and its effect on the stability and integrity of the waste disposal unit shall be considered.

If the existing underlying material provides insufficient strength, then the material is to be removed and replaced with materials which do provide satisfactory stability. During construction all trees, stumps, roots, boulders and debris must be removed. All foundations are to be constructed and graded to provide a smooth, workable surface on which to construct liner systems.

### Liner Systems

A liner system serves as the base from which fill areas are developed at the landfill site. All waste disposal units must be equipped with a leachate drainage and collection system and earthen liner system designed as an integrated system. Liner systems must be designed to function for the entire design period.

The minimum allowable thickness for compacted earth liner systems is 1.52 meters (5 feet). The liner system must be compacted to achieve a maximum hydraulic conductivity of  $1 \times 10^{-7}$

centimeters per second. Compacted earth liners are to be constructed from materials whose properties are not affected by contact with the constituents of the leachate expected to be produced.

A combination of geomembrane and compacted earth may be used to provide adequate liner requirements. In such a case the compacted earth liner shall be no less than 0.91 meter (3 feet) in thickness and the geomembrane shall be no less than 60 mils in thickness and meet additional regulatory requirements.

Note that the requirements for liner systems apply not only to the bottom of a waste disposal unit but also to the sides of the unit where waste is placed underground. Usually the requirement for liner is not by surrounding soil conditions but where that is not possible slurry trenches or cutoff walls may be constructed to provide leachate containment. If such systems are proposed they must meet certain State regulations.

### Leachate Systems

#### Leachate Drainage Systems

Leachate drainage systems are installed in the base of the waste disposal unit in order to intercept and drain leachate off of the base liner system. Leachate drainage systems must be designed to maintain a maximum head of leachate 0.30 meter (one foot) above the liner system and to operate during the month when the highest average monthly precipitation occurs and, if the liner bottom is located within the saturated groundwater zone, under the condition that the groundwater table is at its seasonal high level.

A drainage layer must overlay the entire liner system and must be no less than 0.30 meter (one foot) thick with a hydraulic conductivity equal to a greater than  $1 \times 10^{-3}$  centimeters per second.

The drainage layer must be designed to assure laminar flow of leachate and incorporate measures to prevent clogging or intrusion of fine material. The drainage system must use materials which will be chemically resistant to waste and the leachate produced.

#### Leachate Collection System

The leachate collection system collects the leachate which has flowed through the leachate drainage system described immediately above. Leachate collection pipes must be designed to allow for open channel flow and of sufficient size to allow cleaning.

#### Leachate Treatment And Disposal Systems

Leachate that has been collected by the drainage and collection systems described above must be treated before discharge to surface water. Leachate may also be "recycled" in the landfill to speed the stabilization of the waste. A leachate management system may consist of any combination of storage, treatment, pretreatment and disposal options.

#### Landfill Gas Management Systems

Landfill gas monitoring devices must be located at the waste disposal unit in sufficient quantity to provide a representative sampling of the composition and building of gases within the unit. Monitoring devices must be placed around the waste disposal unit at locations and elevations capable of detecting migrating gas from the ground surface to the lowest elevation of the liner system or the top elevation of the groundwater, whichever is higher. Also, State regulations require that at least three ambient air monitoring locations must be provided.

A landfill gas management system must be installed if any one

of the following conditions are indicated as a result of the landfill gas monitoring program.

1. A methane concentration greater than 50 percent of the lower explosive limit in air is detected below the ground surface by a monitoring device or is detected by an ambient air monitor located at or beyond the property boundary or 30.5 meters (100 feet) from the edge of the unit, whichever is less, unless the operator can demonstrate that the detected methane concentration is not attributable to the facility;
2. Methane is detected at a concentration greater than 25 percent of the lower explosive limit in air in any building on or near the facility, unless the operator can demonstrate that the detected methane concentration is not attributable to the facility;
3. Malodors caused by the unit are detected beyond the property boundary; or
4. Leachate is recycled.

Landfill gas management systems may include landfill gas venting systems, landfill gas collection systems and landfill gas processing and disposal systems.

#### Groundwater Monitoring Systems

All potential sources of discharges to groundwater within the waste disposal facility including, but not limited to, all distinct waste disposal units and the leachate management system must be identified and studied through a network of monitoring wells. Monitoring wells designed and constructed as part of the monitoring network must be maintained along with records that include, but are not limited to, exact well location, well size, type of well, the design and construction practice used in its installation and well and screen depths.

A network of monitoring wells must be established at sufficient locations downgradient with respect to groundwater flow and not excluding the downward direction, to detect any discharge

of contaminants from any part of a potential source of discharge. Wells should be located in stratigraphic horizons that could serve as contaminant migration pathways. Monitoring wells are to be placed as close to the potential source of discharge as possible without interfering with waste disposal operations and within half the distance from the edge of the potential source of discharge to the zone of attenuation downgradient, with respect to groundwater flow, from the source. A minimum of at least one well must be established at the edge of the zone of attenuation and must be located downgradient with respect to groundwater flow and not excluding the downward direction, from the waste disposal unit.

#### Surface Water Drainage

At a waste disposal facility surface water from precipitation will drain from two areas, disturbed and undisturbed areas. Runoff from disturbed areas is of particular concern because it may be contaminated by coming into contact with waste. A summary of regulatory standards for surface waste drainage follows.

#### Runoff From Disturbed Areas

1. Runoff from disturbed areas resulting from precipitation events less than or equal to the 25-year, 24-hour precipitation event that is discharged to waters of the State shall meet the requirements of State of Illinois Water Pollution Control Regulations.
2. All discharges of runoff from disturbed areas to waters of the State shall be permitted by the IEPA State of Illinois Water Pollution Control Regulations.
3. All treatment facilities shall be equipped with bypass outlets designed to pass the peak flow of runoff from the 100-year, 24-hour precipitation event without damage to the treatment facilities or surrounding structures.
4. All surface water control structures shall be operated until the final cover is placed and erosional stability

is provided by the vegetative or other cover.

5. All discharge structures shall be designed to have flow velocities that will not cause erosion and scouring of the natural or constructed lining, i.e. the bottom and sides, of the receiving stream channel.

#### Diversion of Runoff From Undistributed Area

1. Runoff from undistributed areas shall be diverted around disturbed areas unless the operator shows that it is impractical based on site-specific conditions.
2. Diversion facilities shall be designed to prevent runoff from the 25-year, 24-hour precipitation event from entering disturbed areas.
3. Runoff from undistributed areas which becomes commingled with runoff from disturbed areas shall be handled as runoff from disturbed areas and treated.
4. All diversion structures shall be designed to have flow velocities that will not cause erosion and scouring of the natural or constructed lining, i.e. the bottom and sides, of the diversion channel and downstream channels.

All diversion structures shall be operated until the final cover is placed and erosional stability is provided by the vegetative or other cover.

#### OPERATING PRACTICES

Just as there are differences in design, so too there are differences in operating practices. Historically, daily cover was not placed at garbage dumps. As previously discussed, daily cover provides protection from vectors, minimizes litter and odors, and reduces the amount of water entering the site due to precipitation which would later become leachate. Usually garbage was dumped at the site without being compacted. This led to increased problems similar to lack of daily cover. Sometimes, uncontrolled burning occurred. Usually this was due to the indiscriminate dumping of a "hot load" but some landfill owners burned garbage to reduce the volume in an area. Usually the garbage smoldered rather than

burned. Groundwater monitoring was almost never conducted. Also, prior to 1976, the date for adoption of the Resource Conservation and Recovery Act, hazardous wastes were often dumped along with other waste materials at the local garbage dump. Who from that time-period can forget the image of the local "bear-pit" or the smoldering garbage pile; both conditions indicating an environmental menace. For the most part, such sites no longer exist because stricter environmental standards have lead to their closure.

The operating practices discussed here describe the practices at modern sanitary landfills. This section encompasses a wide range of landfill operating practices designed to ensure safe conditions on and adjacent to the landfill site. The operating requirements discussed in this Section conform with the requirements of Part 811 (Standards For New Solid Waste Landfills) of State regulations for solid waste disposal. The standards discussed herein are applicable to putrescible and chemical waste landfills.

The principal operational components to be considered at a landfill include:

1. Construction Quality Assurance Programs;
2. Compaction and Placement of Waste;
3. Placement of Cover;
4. Salvaging;
5. Leachate Sampling;
6. Landfill Gas Monitoring;
7. Groundwater Monitoring;
8. Load Checking; and
9. Miscellaneous Operation Controls.

### Construction Quality Assurance Programs

State regulations require that installation of designed structures must occur according to a construction quality assurance program. The quality assurance program requires the designation of a Construction Quality Assurance (CQA) officer who shall be a professional engineer and shall supervise and be responsible for all inspections, testing and other activities required to be implemented as part of the CQA program.

The construction quality assurance program must also contain provisions for sampling of construction materials and operations during construction; documentation procedures including daily reports and photographic records; and acceptance reports by the CQA officer of each major construction phase.

### Compaction And Placement Of Waste

All waste is to be deposited at the lowest part of the active face and compacted to the highest achievable density necessary to minimize void space and settlement unless precluded by extreme weather conditions. The Illinois Environmental Protection Agency (IEPA) may approve an alternative location for placement of wastes if the site operator demonstrates that it is required under the conditions existing at the site or for reasons of safety.

The working face of the waste disposal unit is to be no larger than is necessary to conduct operations in a safe and efficient manner. Slopes of the working face are to be no steeper than 2 to 1 (horizontal to vertical) unless waste is stable at steeper slopes. Waste must be placed in a phased manner allowing mass stability at all times and so as not to damage any appurtenances (i.e. leachate and gas collection systems) at the site.

### Placement of Cover

The use of cover systems at the landfill site is the most effective means of controlling the contents within the landfill.

There are three distinct types of cover operations required at landfills including daily cover, intermediate cover and final cover. Cover installation will produce the following results:

1. Control vectors (pests: rodents, insects and birds) which can transmit and carry diseases;
2. Alleviate odor, litter and air emissions;
3. Lesson the risk of fire;
4. Reduce the infiltration of rainwater; and
5. Enhance site appearance and utilization.

### Daily Cover

Daily cover is used in areas which have recently been filled with waste. Regulations require that a uniform layer of at least 0.15 meter (six inches) of clean soil material must be placed on all exposed waste by the end of each day of operation. Experience shows that average depths of 12+ inches must be provided to assure this minimum. Alternative materials or procedures, including the removal of daily cover prior to additional waste placement may be used providing that the alternative materials or procedures achieve equivalent or superior performance to the performance of at least six inches of clean soil in terms of:

1. Prevention of blowing debris;
2. Minimization of access to waste by vectors;
3. Minimization of the threat of fires at the open face; and
4. Minimization of odors.

### Intermediate Cover

Intermediate cover is applied to areas which have been filled with waste in the past but will not receive additional waste for an extended period of time. Areas which are not to receive additional waste within 60 days must have a cover equivalent to 0.30 meter (1 foot) of compacted clean soil material. Areas with intermediate cover are to be graded so as to facilitate drainage of runoff and minimize infiltration sees standing water. The grade and thickness of such areas must be maintained until such time when additional waste is filled in the area.

### Final Cover

Final cover is applied to those areas of the waste disposal facility which have reached final design elevations for waste filling operations. There are three components to the final cover system including a low permeability layer overlain by a final protection layer with a vegetative cover. State regulations are very specific in the treatment of these components.

### Salvaging

Salvaging of reusable materials at the landfill site is allowed by State regulations but must be accomplished in a controlled fashion. Salvaging must not interfere with regulated waste disposal operations or delay the construction of any appurtenances required for the operation of the facility. Salvageable materials may be accumulated on-site but must be managed so as not to create a nuisance, harbor vectors, cause malodors or create an unsightly appearance. Also, they may not be stored on-site for longer than seven days unless the IEPA has issued a permit for such storage.

### Leachate Sampling

Representative examples of leachate are to be collected from each waste disposal unit once per quarter during the term of operation. The frequency of monitoring for any individual constituent may be changed to once per year if it is not detected in the leachate. If the constituent is later detected, testing frequency must return to the quarterly schedule.

Leachate is to be tested for the following constituents prior to treatment or pretreatment:

1. Five day biochemical oxygen demand (BOD<sub>5</sub>);
2. Chemical oxygen demand;
3. Total Suspended Solids;
4. Total Iron;
5. pH;
6. Any other constituents listed in the operator's National Pollution Discharge Elimination System (NPDES) discharge permit, pursuant to State Water Pollution Control regulations;
7. All of the indicator constituents chosen in accordance with State solid waste regulations and used by the operator for groundwater monitoring.

### Landfill Gas Monitoring

All gas monitoring devices, including the ambient air monitors shall be operated to obtain samples on a monthly basis for the entire operating period and for a minimum of five years after closure. After a minimum of five years after closure, monitoring frequency may be reduced to quarterly sampling intervals. The sampling frequency may be reduced to yearly sampling intervals upon the installation and operation of a gas collection system equipped with a mechanical device such as a compressor to withdraw gas. After a minimum of five years or, in the case of landfills, other

than those used exclusively for disposing of wastes generated at the site, a minimum of fifteen years after closure, monitoring shall be discontinued if the following conditions have been met for at least one year:

1. The concentration of methane is less than five percent of the lower explosive limit in air for four consecutive quarters at all monitoring points outside the unit; and
2. Monitoring points within the unit indicate that methane is no longer being produced in quantities that would result in migration from the unit and exceed State standards.

The facility operator must include in the permit, a list of air toxics to be monitored in addition to the following parameters. The IEPA shall determine the monitoring frequency of the listed compounds based upon their emission rates and ambient levels in the atmosphere. All below ground monitoring devices shall be monitored for the following parameters at each sampling interval:

1. Methane;
2. Pressure;
3. Nitrogen;
4. Oxygen;
5. Carbon dioxide; and
6. Any compound on the list of air toxics, adopted by the IPCB pursuant to Section 9.5 of the Environmental Protection Act, which is expected to be produced in the landfill unit.

Ambient air monitors are to be sampled for methane only when the average wind velocity is less than 8 kilometers (five miles) per hour at a minimum of three downwind locations 30.49 meters (100 feet) from the edge of the unit or the property boundary, whichever is closer to the unit. All buildings within a facility shall be monitored for methane by utilizing continuous detection devices located at likely points where methane might enter the building.

### Groundwater Monitoring

The groundwater monitoring program must include consistent sampling and analysis procedures to assure that monitoring results can be relied upon to provide data representative of groundwater quality in the zone being monitored. The waste facility operator must utilize procedures and techniques to insure that collected samples are representative of the zone being monitored and that prevent cross contamination of samples from other monitoring wells or from other samples. At least 95 percent of a collected sample must consist of groundwater from the zone being monitored. The operator must establish a quality assurance program that provides quantitative detection limits and the degree of error for analysis of each chemical constituent and must establish a sample preservation and shipment procedure that maintains the reliability of the sample collected for analysis. The operator must institute a chain of custody procedure to prevent tampering and contamination of the collected samples prior to completion of analysis.

At a minimum, the operator must sample the following parameters at all wells at the time of sample collection and immediately before filtering and preserving samples for shipment:

1. The elevation of the water table;
2. The depth of the well below ground;
3. pH;
4. The temperature of the sample; and
5. Specific Conductance.

### Load Checking

The waste facility operator must implement a load checking program for detecting and discouraging attempts to dispose of regulated hazardous waste at the facility. The load checking

program must consist of, at a minimum, the following components:

1. Random Inspections. An inspector shall examine at least three random loads of solid waste delivered to the landfill on a random day each week. The drivers randomly selected by the inspector shall be directed to discharge their loads at a separate, designated location at the facility where an inspector will occur.
2. Recording Inspection Results. Information and observations from each random inspection are to be recorded in writing and retained at the facility for at least three years. The recorded information must include, at a minimum, the date and time of the inspection; the names of the hauling firm and the driver of the vehicle; the vehicle license plate number; the source of the waste, as stated by the driver; and observations made by the inspector during the detailed inspection. The written record must be signed by both the inspector and the driver.
3. The facility operator must train designated inspectors, equipment operators, weigh station attendants, spotters at a large facilities, and all other appropriate facility personnel in the identification of potential sources of regulated hazardous wastes. The training program shall emphasize familiarity with containers typically used for regulated hazardous wastes and with labels for regulated hazardous wastes, under RCRA, and for hazardous materials under the Hazardous Materials Transportation Act (49 U.S.C. 1801 et seq.).

If any regulated hazardous wastes are identified by random load checking, or are otherwise discovered to be improperly deposited at the facility, the facility operator shall promptly notify the IEPA, the person responsible for shipping the wastes to the landfill, and the generator of the wastes, if known. Waste loads identical to the regulated hazardous waste identified through the random load checking which have not yet been deposited in the landfill shall not be accepted. The area where the wastes are deposited shall immediately be cordoned off from public access. The solid waste management facility operator shall assure the cleanup, transportation and disposal of the waste at a permitted hazardous waste management facility. The party responsible for

transporting the waste to the solid waste management facility shall be responsible for the costs of such proper cleanup, transportation and disposal.

Subsequent shipments by persons or sources found or suspected to be previously responsible for shipping regulated hazardous waste shall be subject to the following special precautionary measures prior to the solid waste management facility accepting wastes. The operator shall use precautionary measures such as questioning the driver concerning the waste contents prior to discharge and visual inspection during the discharge of the load at the working face or elsewhere.

#### Miscellaneous Operation Controls

State regulations for the operation of landfills contain several miscellaneous provisions. These are generally described as follows:

1. Equipment. Equipment shall be maintained and available for use at the facility during all hours of operation, so as to achieve and maintain compliance.
2. Utilities. All utilities, including but not limited to heat, lights, power and communications equipment, necessary for safe operation shall be available at the facility at all times.
3. Maintenance. The operator shall maintain and operate all systems and related appurtenances and structures in a manner that facilitates proper operations in compliance with this Part.
4. Open Burning. Open burning is prohibited except in accordance with 35 Ill. Adm. Code 200 through 245.
5. Dust Control. The operator shall implement methods for controlling dust so as to prevent wind dispersal of particulate matter.
6. Noise Control. The facility shall be designed, constructed and maintained to minimize the level of equipment noise audible outside the facility. The

facility shall not cause or contribute to a violation of 35 Ill. Adm. Code 900 through 905 or of Section 24 of the Environmental Protection Act.

7. Vector Control. The operator shall implement measures to control the population of disease and nuisance vectors.
8. Fire Protection. The operator shall institute fire protection measures including, but not limited to, maintaining a supply of water on-site and radio or telephone access to the nearest fire department.
9. Litter Control. The operator shall patrol the facility daily to check for litter accumulation. All litter shall be collected and placed in the fill or in a secure, covered container for later disposal. The facility shall not accept solid waste from vehicles that do not utilize devices such as covers or tarpaulins to control litter, unless the nature of the solid waste load is such that it cannot cause any litter during its transportation to the facility.
10. Mud Tracking. The facility shall implement methods, such as use of wheel washing units, to prevent tracking of mud by hauling vehicles onto public roadways.
11. Boundary Control. Access to the open face area of the waste disposal unit and all other areas within the boundaries of the facility shall be restricted to prevent unauthorized entry at all times. A permanent sign shall be posted at the entrance to the facility stating that disposal of hazardous waste is prohibited and, if the landfill is approved for accepting special wastes, that special wastes must be permitted by the IEPA and accompanied by a manifest and an identification record along with the following information:
  - a. Permit number, if the facility is subject to the permit requirements of Section 21 of the Environmental Protection Act;
  - b. Hours of operation;
  - c. The penalty for unauthorized trespassing and dumping;
  - d. The name and telephone number of the appropriate emergency response agencies who shall be available to deal with emergencies and other problems, if different than the operator; and
  - e. The name, address and telephone number of the

company operating the facility.

#### CLOSURE AND POST-CLOSURE CARE

As part of the landfill permit application, a site-specific Closure/Post-Closure Care Plan must be prepared and submitted to the IEPA. The plan must identify the activities that will take place at closure. The plan also indicates the specific procedures that will be conducted during the post-closure monitoring maintenance period. In addition, the applicant must supply an estimate of costs associated with both closure and post-closure activities.

On-site activities performed during the period of closure must follow IEPA closure planning requirements. The site's closure plan must provide a detailed description of the activities that will take place when the facility closes. At the time of closure, the primary considerations pertain to the ongoing protection of the environment, including adjacent properties.

The Post-Closure Care Plan identifies the maintenance and monitoring procedures that will ensure the environmental integrity of the landfill. The environmental control systems must be capable of functioning effectively throughout the post-closure care period and beyond.

#### 3.3.3.2 Environmental And Siting Considerations

Stated simply, the history of sanitary landfill development has been a story of progressively greater and greater regulation. In the early days of open dumps there were almost no controls nor regulations. Today the sanitary landfill is a highly organized, aggressively regulated activity and whatever environmental concerns existed at one time have been substantially eliminated by regulations and standard practices covering siting, design,

operation and closure/post closure care. The following subsections describe potential environmental impacts and the measures used to control and/or mitigate these impacts as well as issues to be considered during site selection.

## ENVIRONMENTAL CONSIDERATIONS

### Air Quality

In order to ensure that air quality is not affected by site operations, several measures can be implemented to contain and control airborne matter and gases. In an effort to control the migration of road dust from vehicular traffic, site road cleaning should be performed after periods of wet weather. In addition, the construction of major finished site roads would minimize the distance collection vehicles must travel on unpaved access roads.

Efforts should be made to control the tipping of dust-comprised wastes at the working face. For example, no dusts or powders should be accepted on site unless they are wetted to prevent blowing. Water trucks should be available in case of an unsuspected dust delivery.

Gaseous emissions from the products of decomposition are effectively contained by applying daily cover material, minimizing the width of the working face, and prohibiting open burning on-site. Methane gas accumulation can be managed through a gas collection and flaring (or reuse) system.

### Surface Water Quality

The two potential methods of impacting surface water quality within the adjacent areas of the landfill site are the discharge of surface water runoff containing putrescible material and/or suspended solids, and airborne dust settlement in surface waters.

To avoid any negative impacts to surface waters adjacent to the landfill sites' boundaries, runoff should be controlled by the following measures:

- Settlement of all surface water runoff to remove suspended solids;
- Seeding of cover stockpiles to avoid erosion; and
- Collection and treatment of any potentially contaminated runoff.

### Soil And Groundwater

In order to maintain the standard quality of the soil and groundwater on and adjacent to the landfill site, measures must be implemented which deal directly with leachate migration and contaminated runoff. Leachate migration can negatively impact groundwater and soil quality, while contaminated runoff can negatively impact soil quality and surface water quality.

In order to contain leachate a leachate control system should be provided. The leachate control system enables the site operators to remove excess amounts of leachate for treatment off-site. The constant removal of excess amounts of leachate reduces the possibility of leachate migration from the facility. In addition to the leachate control system, IEPA approved liners (clay or synthetic) should be installed to further restrict leachate migration. Groundwater monitoring is performed to verify the effectiveness of the leachate control systems. In an effort to reduce the creation of additional leachate, the site's final cap should be in place and seeded as soon as possible.

Contaminated runoff should be contained and directed on-site through a drainage control system. After the contaminated runoff is contained, it can then be transported for treatment at an off-site facility or treated on-site. The drainage control system

should be designed to prevent runoff water contact with landfilled material.

### Odor

Several actions can be taken to substantially reduce the amount of odors emitted from a landfill site. The application of daily cover to the daily fill areas will eliminate most of the site's odor emissions. The covering of any exposed fill material on the site should be standard practice, whether the material was filled that day or erosion has exposed areas filled previously. Measures can be implemented to avoid methane gas releases. The methane gas, when released, pulls the subsurface decomposition odors to the surface.

### Noise

The site design and layout will have a large impact on the level of noise emitted from the site. To reduce noise impacts off-site, substantial land around the facility is desirable in order to provide a buffer area. Generally a minimum buffer of 150 feet is sought during site development. The buffer zone surrounding the site should contain berms designed to reduce noise. The berms should have a vegetative cover which can further reduce noise.

In addition to the site design, a maintenance program can be implemented to reduce excessive noise on all site vehicles and equipment. Regular inspections of all site vehicles and equipment can be performed to reduce each vehicle's noise impact.

### Traffic

Siting a sanitary landfill facility will require a detailed analysis of the short and long-term traffic impacts caused by the facility. These impacts will primarily result in an increased

concentration of truck traffic. Proper planning and traffic management are integral to ensuring safe traffic flow in the vicinity of a landfill.

On a county-wide basis, a new sanitary landfill facility will not be creating new traffic but rather, will represent a diversion of existing traffic. Presently, most of the solid waste traffic in DuPage is traveling to and from Mallard Lake Landfill, near Bloomingdale, and Greene Valley Landfill, near Woodridge. A sanitary landfill facility, sized for DuPage County alone, would actually decrease the number of solid waste transportation vehicles presently using the roadways network in DuPage County because less solid waste will ultimately be coming from communities outside of DuPage County than presently occurs.

#### Aesthetics

Several measures can be implemented to enhance the visual impact of a landfill site. A visual berm can be constructed along the sites perimeter. The berm can have a vegetative cover to avoid unsightly erosion and to further screen landfill operations. Along areas where berming may not be suitable, construction of fencing can be performed. The fencing can be compatible with other site structures and/or natural conditions. In addition to berms and fences the site operator should implement a landscape program. The program should include the planting of trees, shrubs, flowers, etc. as well as the general upkeep of site grounds. Landscape work should be performed on all areas of the landfill site with special emphasis on areas of public access.

#### SITING CONSIDERATIONS

##### Land Use Compatibility

When considering potential impacts of siting a sanitary

landfill facility, it is essential that the compatibility of the facility with surrounding land uses be carefully addressed. This compatibility is best addressed by selecting a site that does not inherently conflict with existing and future land uses and applicable zoning regulations and then designing the facility with thorough attention to the features that primarily determine how an individual facility relates to its surroundings (e.g., consistent land use, environmental suitability, and facility identity).

Land use characteristics that should be addressed when siting a sanitary landfill facility irrespective of its design features include zoning, existing and future land use, floodplain impacts, wetlands impacts, unique and sensitive natural areas impacts, and impacts on aesthetics. In general, it is desirable to locate sanitary landfill facilities in industrial areas or next to existing solid waste management facilities. Proximity to other types of land uses generally requires increased emphasis on land buffers, visual screening, and architectural treatment.

### Site Selection Considerations

#### Previous Siting Analyses

Successively more restrictive site screening criteria for landfills were applied in the previous solid waste planning efforts for the DuPage County Landfill/Ashfill Feasibility Study and the DuPage County Solid Waste Management Plan. The most restrictive site selection criteria were developed for the Solid Waste Management Plan and they envisioned site evaluation for the consideration of an ashfill to provide residue disposal for a waste-to-energy facility. The criteria developed at that time are described according to category as follows. Points were assigned according to criteria for each site and then totalled.

1. GEOLOGY - 4 points possible

2. PUBLIC WATER WELLS - 2 points possible
3. FLOOD PLAIN - 1 point possible
4. PROXIMITY TO SCHOOLS - 2 points possible
5. PROXIMITY TO RESIDENCES - 3 points possible
6. BUFFER - 3 points possible
7. TYPE OF ACCESS ROAD - 1 total point possible
8. "OTHER" CONSIDERATIONS - assigned 5 possible bonus points

The possible points for the above criteria are summarized as follows:

<u>CATEGORY</u>	<u>Maximum Possible Points</u>
1. Geology*	4
2. Public Wells*	2
3. Floodplain	1
4. Schools	2
5. Residences	3
6. Buffer	3
7. Access	1
8. "Other" (bonus points)	5
	21

\* Category contains minimum State standards which must be met.

### Future Site Selection

In late 1990 the Illinois Pollution Control Board (IPCB) enacted regulations substantially modifying previous regulations for solid waste facilities (Proceeding R88-7). These new regulations define considerable requirements for the siting of new facilities. The regulations provide general location standards applicable to all landfills. They also provide additional facility location requirements and procedures for site investigation for sites proposed to receive putrescible and chemical wastes.

State regulations provide for specific location standards to

be applied in the consideration of sites for all types of new landfills. The standards are listed below.

1. The facility shall meet all requirements under the Wild and Scenic Rivers Act (16 U.S.C. 1271 et seq.).
2. The facility shall not restrict the flow of a 100-year flood, result in washout of solid waste from the 100-year flood, or reduce the temporary water storage capacity of the 100-year floodplain, unless measures are undertaken to provide alternative storage capacity, such as lagoons, holding tanks, or provision of drainage around structures at the facility.
3. The facility shall not be located in areas where it may pose a threat of harm or destruction to the features for which an irreplaceable historic, or archaeological site was listed pursuant to the National Historic Preservation Act (16 U.S. C. 470 et. seq.) or the Illinois Historic Preservation Act (Ill. Rev. Stat. 1989, ch. 127, par. 133d1 et seq.) for which a Natural Landmark was designated by the National Park Service or the Illinois State Historic Preservation Officer, or for which a natural area was designated as a Dedicated Illinois Nature Preserve pursuant to the Illinois Natural Areas Preservation Act (Ill. Rev. Stat. 1989, ch. 105 par. 701 et seq.).
4. The facility shall not be located in areas where it may jeopardize the continued existence of any designated endangered species, result in the destruction or adverse modification of the critical habitat listed for such species, or cause or contribute to the taking of any endangered or threatened species of plant, fish or wildlife listed pursuant to the Endangered Species Act 16 U.S. C. 1531 et seq., or the Illinois Endangered Species Protection Act (Ill. Rev. Stat. 1989, ch. 8, par. 331 et seq.).
5. The facility shall not cause a violation of Section 404 of the Clean Water Act (33 U.S.C. 1344).
6. The facility shall not cause a violation of any requirements implementing an area-wide or statewide water quality management plan for nonpoint source pollution that has been approved under Section 208 of the Clean Water Act (33 U.S.C. 1288).

In addition to the standards provided immediately above,

landfills which are expected to receive putrescible and chemical waste must also meet the following standards according to State regulations.

1. No part of a waste disposal unit shall be located within a setback zone established pursuant to Section 14.2 or 14.3 of the Illinois Environmental Protection Act;
2. No part of a waste disposal unit shall be located within the recharge zone or within 366 meters (1200 feet), vertically or horizontally, of a sole-source aquifer designated by the United States Environmental Protection Agency pursuant to Section 1424 (e) of the Safe Drinking Water Act (42 U.S.C. 300f et seq.) unless there is a stratum between the bottom of the waste disposal unit and the top of the aquifer that meets the following minimum requirements:
  - a. The stratum has a minimum thickness of 15.2 meters (50 Feet);
  - b. The maximum hydraulic conductivity in both the horizontal and vertical directions is no greater than  $1 \times 10^{-7}$  centimeters per second, as determined by in situ borehole or equivalent tests;
  - c. There is no indication of continuous sand or silt seams, faults, fractures or cracks within the stratum that may provide paths for migration; and
  - d. Age dating of extracted water samples from both the aquifer and the stratum indicates that the time of travel for water percolating downward through the relatively impermeable stratum is no faster than 15.2 meters (50 feet) in 100 years.
3. A facility located within 152 meters (500 feet) of the right of way of a township or county road or state or interstate highway shall have its operations screened from a view by a barrier of natural objects, fences, barricades, or plants no less than 2.44 meters (8 feet) in height.
4. No part of a unit shall be located closer than 152 meters (500 feet) from an occupied dwelling, school, or hospital that was occupied on the date when the operator first applied for a permit to develop the unit or the facility containing the unit, unless the owner of such dwelling, school, or hospital provides permission to the operator, in writing, for a closer distance.

5. The facility shall not be located closer than 1525 meters (5000 feet) of any runway used by piston type aircraft or within 3050 meters (10,000 feet) of any runway used by turbojet aircraft unless the Federal Aviation Administration provides the operator with written permission, including technical justification, for a closer distance.

Prior to the submission of any application for permit to the Illinois Environmental Protection Agency, the site owner must conduct a hydrogeologic investigation. The purposes for the hydrogeologic investigation are to provide information to perform a groundwater impact assessment and to provide information to establish a groundwater monitoring system. The study area must consist of the entire area occupied by the facility and any adjacent areas, if necessary. The study consists of three phases described as follows.

1. Minimum Requirements for a Phase I Investigation

- a. The facility owner shall conduct a Phase I Investigation to develop the following information:

- (1 Climatic aspects of the study area;
- (2 The regional and study area geologic setting, including a description of the geomorphology and stratigraphy of the area;
- (3 The regional groundwater regime including water table depths and aquifer characteristics; and
- (4 Information for the purpose of designing a Phase II Hydrogeologic Investigation.

- b. Specific Requirements

- (1 The regional hydrogeologic setting of the waste disposal unit shall be established by using material available from all possible sources, including, but not limited to, the Illinois Scientific Surveys, the Illinois Environmental Protection Agency, other State and Federal organizations, water well drilling logs, and previous investigations.

- (2) A minimum of one continuously sampled boring shall be drilled on the site, as close as feasible to the geographic center, to determine if the available regional hydrogeologic setting information is accurate and to characterize the site-specific hydrogeology to the extent specified by this phase of the investigation. The boring shall extend at least 15.2 meters (50 feet) below the bottom of the uppermost aquifer or through the full depth of the confining layer below the uppermost aquifer, or to bedrock, if the bedrock is below the upper most aquifer, whichever elevation is higher. The locations of any additional borings, required under this subsection, may be chosen by the investigator, but shall be sampled continuously.

2. Minimum Requirements for a Phase II Investigation

- a. Using the information developed in the Phase I survey, a Phase II study shall be conducted to collect the site-specific information listed below as needed to augment data collected during the Phase I investigation and to prepare for the Phase III investigation:
  - (1) Structural characteristics and distribution of underlying strata including bedrock;
  - (2) Chemical and physical properties including, but not limited to, lithology, mineralogy, and hydraulic characteristics of underlying strata including those below the uppermost aquifer;
  - (3) Soil characteristics, including soil types, distribution, geochemical and geophysical characteristics;
  - (4) The hydraulic conductivities of the uppermost aquifer and all strata above it;
  - (5) The vertical extent of the uppermost aquifer;
  - (6) The direction and rate of groundwater flow.
- b. Specific Requirements
  - (1) One boring shall be located as close as feasible to the topographical high point, and another shall be located as close as feasible

to the topographical low point of the study area.

- (2) At least one boring shall be at or near each corner of the site. Where the property is irregularly shaped the borings shall be located near the boundary in a pattern and spacing necessary to obtain data over the entire study area.
- (3) Additional borings may be located at intermediate points at locations and spacings necessary to establish the continuity of the stratigraphic units.
- (4) Piezometers and groundwater monitoring wells shall be established to determine the direction and flow characteristics of the groundwater in all strata and extending down to the bottom of the uppermost aquifer. Groundwater samples taken from such monitoring wells shall be used to develop preliminary information needed for establishing background concentrations in accordance with State regulations.
- (5) Other methods may be utilized to confirm or accumulate additional information. Such methods may be used only as a supplement to, not in lieu of, site-specific boring information. Other methods include, but are not limited to, geophysical well logs, geophysical surveys, aerial photography, age dating, and test pits.

### 3. Minimum Standards for a Phase III Investigation

- a. Using the information developed during the Phase I and Phase II Investigations, the facility owner shall conduct a Phase III Investigation. This investigation shall be conducted to collect or augment the site-specific information needed to carry out the following:
  - (1) Verification and reconciliation of the information collected in the Phase I and II investigations;
  - (2) Characterization of potential pathways for contaminant migration;

- (3) Correlation of stratigraphic units between borings.
  - (4) Continuity of petrographic features including, but not limited to, sorting, grain size distribution, cementation and hydraulic conductivity.
  - (5) Identification of zones of potentially high hydraulic conductivity.
  - (6) Identification of the confining layer, if present;
  - (7) Concentrations of chemical constituents present in the groundwater below the waste disposal unit, down to the bottom of the uppermost aquifer, using a broad range of chemical analysis and detection procedures such as, gas, chromatographic and mass spectrometric scanning. However, additional measurements and procedures shall be carried out to establish background concentrations for:
    - i) Any constituent for which there is a public or food processing water supply standard at 35 Ill. Adm. Code 302 established by the Board and which is expected to appear in the leachate; and
    - ii) Any other constituent for which there is no Board-established standard, but which is expected to appear in the leachate at concentrations above PQL, as defined in Section 811.319 (a) (4) of State regulations for that constituent.
  - (8) Characterization of the seasonal and temporal, naturally and artificially induced, variations in groundwater quality and groundwater flow.
  - (9) Identification of unusual or unpredicted geologic features, including: fault zones, fracture traces, facies changes, solution channels, buried stream deposits, cross cutting structures and other geologic features that may affect the ability of the operator to monitor the groundwater or predict the impact of the disposal facility on groundwater.
- b. In addition to the specific requirements applicable

to Phase I and II investigations, the facility owner shall collect information needed to meet the minimum standards of a Phase III investigation by using methods that may include, but not limited to excavation of test pits, additional borings located at intermediate points between boreholes placed during Phase I and II investigations, placement of piezometers and monitoring wells, and institution of procedures for sampling and analysis.

The facility owner may conduct the hydrogeologic investigation in any number of alternative ways provided that the necessary information is collected in a systematic sequence consisting of at least three phases that is equal to or superior to the investigation procedures described above.

The facility owner must perform a groundwater impact assessment to determine the potential impacts from the seepage of leachate. The amount of seepage that may be released during operations must be estimated considering:

1. The minimum design standards for slope configuration, cover, liner, leachate drainage and collection system; and
2. The actual design standards for the waste disposal unit.

The concentration of constituents in the leachate must be determined from actual leachate samples from the waste or similar waste, or laboratory derived extracts. A contaminant transport model, approved for use by the Illinois Environmental Protection Agency, must be utilized to estimate the concentration of the leachate constituents over time and space.

Hydrogeologic investigations are also used to provide background concentrations for groundwater constituents. These background concentrations are used during regular groundwater monitoring while the facility is operational.

The sites identified in previous planning efforts have not been reviewed within the context of revised State regulations discussed here. Before consideration of new landfill sites in the

future, the site requirements and investigations discussed here would need to be addressed. While there are specific State requirements affecting the selection of new landfill sites as discussed here, the County may consider additional siting considerations.

It is important to note that the regulations discussed in this Section are for new facilities. The Illinois Pollution Control Board has also revised regulations addressing existing, permitted landfills.

### 3.3.3.3 Costs

Sanitary landfill sites generate costs which can generally be classified as either capital costs (development and equipment costs) or operational costs. The general distinction between capital and operational costs is based on the fact that operational costs are sensitive to the rate of refuse disposal. Capital costs are primarily those expenses which must be committed before the first load of refuse is placed in the facility. Capital and operational costs include:

#### Capital Costs

1. Land Purchase;
2. Engineering, Permitting, and Monitoring During Construction
3. Initial Site Development; and
4. Equipment Purchase.

#### Operational Costs

1. Excavation, Daily Cover Application, Compaction of Refuse and General Maintenance During Tipping;
2. Monitoring, Engineering, and Surveying During Operation;
3. Insurance and Surcharges;

4. Leachate Removal and Treatment/Disposal;
5. Gas Collection and Removal;
6. Equipment Operation; and
7. Administration.

The value of land in DuPage County is not tied to its agricultural productivity but to its near term potential for development. As such, the value and selling price of vacant land in the county is a function of its location relative to other developing areas. For example, land in the eastern part of the county is generally more valuable than in the western part of the county. Land fronting on major transportation arteries is usually more valuable than land away from the major transportation network. Land which has commercial development potential is more valuable than land with residential development potential. Land in the western portion of the county immediately adjacent to existing developments is more valuable than land separated by intervening parcels. Dry land is more valuable than floodplain, wetlands or low lands.

Analysis of county waste generation conducted at the time of the Landfill/Ashfill Feasibility Report (1988) indicated that a parcel of at least 200 acres would be required for a new sanitary landfill to serve DuPage County. The cost for a parcel of this size would be directly influenced by its location and surrounding development at the time of purchase.

The total cost to develop, operate and maintain a sanitary landfill facility is dependent upon many variables not the least of which is the specific parcel of land selected. The site geology may be such that extensive undercutting may be required prior to operation, thus adding to the total cost of the site. These are just two examples of situations that can drastically affect the total cost of establishing and operating a sanitary landfill

facility. Landfill facilities also have to adapt to unforeseen changes in landfill regulations and these can represent unforeseen costs. These and other variables make it very difficult to estimate future sanitary landfill costs. In Appendix A-4, some cost estimates are given for the different stages of a landfill facility's development.

Operational costs are as difficult to calculate as potential land costs. Therefore, the operation costs are broken down to a "per ton of refuse received" amount. The cost to operate a sanitary landfill in 1990 is estimated to be approximately \$12.75 per ton of refuse received.

Funds used to pay for closure and post-closure care should be accumulated during the active life of the landfill facility. A percentage of the tipping fee should be set aside to assure the closure/post-closure care will be met. The amount to be set aside in such a fund would be determined at the time of permitting.

#### 3.3.3.4 Considerations For Continued Use of Existing Sites

DuPage County presently contains two operating sanitary landfills. These two landfills are the Mallard Lake Landfill located in unincorporated Hanover Park and the Greene Valley Landfill located in unincorporated Naperville. Both facilities have Illinois Environmental Protection Agency permits for operation.

In 1990 the Illinois Pollution Control Board revised regulations affecting solid waste facilities in Illinois (Proceeding R88-7). The revised regulations affect both new facilities and existing facilities. The State regulations establish three categories of standards for existing landfills:

1. Standards for existing waste disposal units accepting inert waste only, or accepting chemical and putrescible

wastes that must initiate closure within two years;

2. Standards for existing waste disposal units accepting chemical and putrescible wastes that must initiate closure within seven years; and
3. Standards for existing waste disposal units accepting chemical and putrescible wastes that may remain open for more than seven years.

The category into which a landfill falls is dependent upon the ability to meet the associated requirements for design and operation. No later than March 18, 1991 every existing landfill owner/operator in the State is required to send a notice to the Illinois Environmental Protection Agency describing the facility, estimated date of closure of existing waste disposal units and which of the above categorizations is applicable.

Note that a waste disposal "facility" may be comprised of one or more waste disposal "units". A waste disposal unit means a contiguous area used for solid waste disposal.

All of the standards for design and operation of waste disposal units which were discussed in preceding sections are required for existing waste disposal units except the following:

1. Location standards;
2. Foundation and mass stability analysis;
3. Liner and leachate drainage and collection requirements;
4. The final cover requirements shall not apply to units or parts of units closed, covered and vegetated prior to the effective date of the revised regulations;
5. The hydrogeological site investigations required prior to permitting;
6. The groundwater impact assessment;
7. The groundwater monitoring programs; and
8. The groundwater quality standards.

The following standards apply to existing waste disposal units that have valid IEPA permits:

1. No new units shall be opened and an existing unit may not expand beyond the area included in a permit prior to the effective date of the revised regulations or, in the case of permit exempt facilities, beyond the area needed for landfilling to continue until closure is initiated;

After the effective date of the revised regulations, the unit may not apply for supplemental wastestream permits to accept new special wastes. However, the unit may continue to accept special waste under permits existing prior to the effective date of the revised regulations and may renew those permits as necessary.

2. Groundwater Standards

A unit shall not contaminate a source of drinking water at the compliance boundary, defined as any point on the edge of the unit at or below the ground surface. At any point on the compliance boundary, the concentration of constituents shall not exceed the water quality standards specified in 35 Ill. Adm. Code 302.301, 302.303, 302.304, and 302.305. The Illinois Pollution Control Board (IPCB) may provide for a zone of attenuation and adjust the compliance boundary in accordance with Section 28.1 of the Illinois Environmental Protection Act and the procedures of 35 Ill. Adm. Code 106. Subpart G upon petition demonstration by the operator that the alternative compliance boundary will not result in contamination of groundwater which may be needed or used for human consumption. In reviewing such petitions, the IPCB will consider the following factors:

- a. The hydrogeological characteristics of the unit and surrounding land, including any natural attenuation and dilution characteristics of the aquifer;
- b. The volume and physical and chemical characteristics of the leachate;
- c. The quantity, quality, and direction of flow of groundwater underlying the facility;
- d. The proximity and withdrawal rates of groundwater users;
- e. The availability of alternative drinking water supplies;

- f. The existing quality of the groundwater, including other sources of contamination and their cumulative impacts on the groundwater;
- g. Public health, safety, and welfare effects; and
- h. In no case shall the zone of compliance extend beyond the facility property line or beyond the annual high water mark of any navigable surface water.

#### Overview Of Components At Existing Landfills

The following is a breakdown of the design components used at the Greene Valley and Mallard Lake landfills.

#### Underlying Geology

The Greene Valley and Mallard Lake Landfills are required by permit through the IEPA to use clay liner systems throughout the development of the site. IEPA permits require that bottom and side seals be constructed of a minimum ten feet of clay/soil with a hydraulic conductivity of no greater than  $1 \times 10^{-7}$  cm/sec. The operators of each site are required to certify that the liners meet or exceed regulatory specifications. In addition, the Greene Valley and Mallard Lake landfills can apply for supplemental permits which would enable the sites to use different synthetic liner systems. The two landfills currently use clay liners only.

#### Leachate Collection and Treatment

Both the Greene Valley and Mallard Lake landfills possess leachate collection systems. The leachate collection systems conform to specifications outlined in each site's IEPA operating permit. Both sites incorporate both internal and perimeter leachate collection systems. The operators of both sites have certified installation of the leachate collection systems. Further, both operators have shown the viability of the installed

systems by regular withdrawal of leachate by both systems.

At the Greene Valley site leachate is collected on a regular basis and trucked off-site to an IEPA permitted treatment facility. At Mallard Lake leachate has regularly been collected and recirculated at the site. This technique can minimize the amount of leachate to be transported off-site; can accelerate the stabilization of the landfill; and can reduce the contaminants in the leachate over a period of time due to breakdown of constituents in the leachate. In addition, each site has implemented leachate quality monitoring programs to document variances in the components of leachate generated on-site.

#### Cover Systems

The Greene Valley and Mallard Lake Landfills adhere to permit and regulatory requirements with respect to the application of cover material on site. The two landfills primarily use soil/clay cover material. The Greene Valley site, however, has received an experimental permit from the IEPA which allows the site to use synthetic types of daily cover on a short term basis.

#### Gas Control and Collection

The Greene Valley and Mallard Lake landfills are both equipped with systems which collect, monitor, and dispose of landfill gas generated on site. Both facilities contain IEPA approved landfill gas collection pipeline systems. The pipeline systems installed at each site allow for the landfill gas to be directed to a singular point for disposal. The Greene Valley and Mallard Lake Landfills dispose of landfill gas by the controlled burning of gas through flare systems. Both facilities have implemented landfill gas monitoring systems as part of the overall landfill gas management system.

### Groundwater Monitoring

The Greene Valley and Mallard Lake Landfills operate IEPA approved groundwater monitoring programs. These groundwater monitoring programs meet individual IEPA permit requirements. The number and locations of monitoring wells are determined by IEPA regulations and permit requirements. The frequency of sampling and the procedures of sampling to be followed are also determined by IEPA regulations and permit requirements. As IEPA regulations have been changed or upgraded since the establishment of the Greene Valley and Mallard Lake landfills, the changes in regulation have been incorporated into the current groundwater monitoring programs at the sites.

### CONSIDERATIONS FOR CONTINUED USE

The text immediately above has discussed the regulatory requirements for existing, permitted waste disposal facilities in Illinois. A general description of the design of Mallard Lake and Greene Valley landfills has also been provided.

It appears that both sites will meet the regulatory requirements to remain open for more than seven years, one of the categories for existing, permitted waste disposal facilities. However, the actual determination of applicable standards at each facility will be determined by the Illinois Environmental Protection Agency (IEPA).

By their actions and comments, the Forest Preserve District and the operators of the two landfills apparently will file notification with the IEPA that the sites should be classified as eligible to remain open for more than seven years. Plan-1990 assumes that the two sites will be classified in this manner.

It is not the purpose of Plan-1990 to comment on the

political issues regarding the continued use of the two landfills. Rather, Plan-1990 recognizes the asset for future waste disposal which these two sites can provide to the county. This asset can be significantly enhanced by employing waste management methods prior to final disposal which maximize materials recovery and reduction in the volume of waste requiring landfilling. This includes the implementation of waste recycling; reduction and diversion processes; employment of materials recovery by waste processing; additional waste processing to reduce the volume of waste; and, especially, the limitation of waste accepted at the landfills in order to address DuPage County's waste disposal needs. Standards for disposal at the two sites should address these mechanisms to maximize the sites' assets.

The two sites are currently owned by the Forest Preserve District. The future ownership of the sites has been assumed to remain with the Forest Preserve District for Plan-1990. However, during the discussion of Resolutions 90-202 and 90-203, the possibility of transfer of ownership to the County, which has clear authority to own and operate waste disposal sites, was mentioned by at least one Commissioner. From a technical standpoint, the ownership of the sites has no real consequence in the provision of a solid waste management system to the County other than providing direct control over the operation.

Conceivably, it is possible for the County to completely define and provide a waste management system up to the point of final disposal and then direct the flow of remaining material to the designated disposal site(s). In other words, the County could implement any aspect of waste management preceding final disposal discussed in Plan-1990 and then direct the left-over waste to the two existing landfills owned by the Forest Preserve District. This waste could also be directed to other facilities. Therefore, if the County delivers waste to the two existing landfills, the delivery of waste by the County should be according to agreements

which would normally be sought with other (private) final disposal operators. A guarantee of disposal capacity should be provided to the County in return for its guarantee of delivery of waste. Also, issues relative to long-term environmental responsibilities should be addressed. The use of the two landfills (if allowed by the Forest Preserve District) by the County as its final disposal site(s) should be viewed in a manner similar to the use of a landfill owned by any other private developer/owner.

#### 3.3.4 Other Disposal Options

This subsection discusses "other" processing and disposal options available to the County for future consideration and as described in Appendix A-4. The options have been categorized as "other" because of uncertainties of implementation, availability or acceptability. There are two principal divisions in this category.

The first division is "Out-Of-County/Private Projects" which include any projects which will be provided by private interests inside or outside of DuPage County but which will accept DuPage waste. Such projects may employ combustion or landfilling technologies described in previous sections or may employ "other" technologies as discussed below.

The second division is "emergent or specialized technologies" which include waste processing and disposal technologies which may either be in very limited use or, as yet, have not demonstrated commercial viability. A general description of several such processes is provided.

The purpose for this discussion is to note that the County may have other processing/disposal options to it in the future which may not be clearly apparent at the present time. Such options may be located in or outside of the county. Therefore, it is important to remain abreast of opportunities and technologies as

they develop.

#### 3.3.4.1 Out-Of-County/Private Project Options

In previous solid waste planning efforts by the County, the range of waste disposal options that was considered was primarily limited to alternative facilities which would be developed under County sponsorship and located in DuPage County. This limitation was part of the initial planning mandate. However, prior to preparation of the Solid Waste Management Plan the Solid Waste Planning Committee had officially decided to include consideration of potential out-of-county waste disposal options as part of the subsequent planning efforts.

It is not unusual in the development of solid waste management projects to receive proposals from independent project developers. A variety of entrepreneurs are constantly at work trying to put projects together. A key determinant of a project developer's ability to obtain financing is the project's ability to guarantee an adequate supply of waste and associated revenues from tipping fees. A county such as DuPage, with excellent finances and a large supply of waste, is an excellent target for such privately-initiated projects.

Proposals to provide waste disposal services can come from either governmental units or private developers. Other governmental units may seek to import waste to generate revenues and to benefit from the economies of scale that a larger facility can provide. Private developers are, of course, seeking profits, which generally increase with the size of a solid waste facility.

In reviewing proposals for out-of-county or privately developed disposal facilities, it is advisable that each proposal be given consideration although some will require closer analysis than others. However, whatever the seeming merits of any proposal,

it is not advisable to interrupt progress on development or implementation of the County's plan while such analyses are being performed. There are several reasons for not delaying action.

First, continued stoppages to project development efforts without adequate assurances of project provision elsewhere may prevent the County from ensuring continued availability of waste disposal capacity for DuPage County residents. Proposals may be long in sales appeal and short in specifics. However, all analyses, even those for probably non-viable projects, can be time consuming to evaluate.

Second, the County has far less control over a project being developed by another party. Virtually all solid waste projects are difficult to implement. This difficulty is not necessarily lessened because a project is proposed by private developers and/or located elsewhere. The same forces which oppose provision of new solid waste facilities exist both inside and outside of DuPage County. Therefore, it is reasonable to expect that the same action which may stall project implementation in DuPage County may also affect project development outside of the county.

Third, the formulation and evaluation of those in-county alternatives which are available to the County for its direct development, provides a sound basis of information upon which proposals for out-of-county or privately developed projects can be judged. The County would thus be able to evaluate the costs in the independent proposals with the projected costs for disposal within DuPage County.

On the basis of the above considerations, it is advisable to proceed with implementation of a program which will provide for local waste disposal and siting where the maximum possible control in projects development can be provided. If, on the basis of thorough technical, legal, and financial analyses, a proposal for

out-of-county disposal represents a better solution to the problem of solid waste disposal for DuPage County, then the County's Plan should be revised at that time to indicate its endorsement.

The clearest advantage that an out-of-county disposal option would have is that the County itself would not have the difficult task of selecting and acquiring proposed facility sites within DuPage County, and required permits for those sites. Clearly, the siting of any solid waste facility is an extremely challenging task, and the potential benefits of having these efforts successfully provided by others are not to be taken lightly. However, such a project would not remove the County's responsibilities for planning and provision of solid waste management services. For example, Public Act 85-0990 requires most counties, including DuPage County, to prepare and implement solid waste plans. Similarly, interruption of waste disposal service, whether such disposal occurs inside or outside of DuPage County, would create major difficulties for municipal officials. Additionally, DuPage County would probably need to become involved in various aspects of project development for an out-of-county facility, if selected. For example, it is likely that DuPage County would officially be involved in the process of seeking local siting approval, even for sites outside of DuPage County, since DuPage County wastes would be likely represented as key evidence of the need for the proposed facility.

Use of an out-of-county disposal option would still require the siting of one or more transfer stations to consolidate wastes into more economical quantities for transport to the disposal site.

Finally, the long-term environmental and financial liabilities associated with DuPage County's waste would not be reduced by shipment of these wastes to a site outside of DuPage County. Under federal law, the responsibility for waste resides ultimately with the generator of that waste. In practice, the

responsibility rests with the last identifiable entity generating the waste. In the County's case, the County, and therefore, taxpayers would most likely bear ultimate responsibility.

Considering many of the concerns expressed above, a general list of essential requirements that should be met by proposed out-of-county or private disposal options is provided in Appendix A-4 and includes:

1. Assured long-term (i.e., 20+ years) disposal capacity, with availability guaranteed through contractual commitments.
2. Contractual guarantees that, should the option provided not be available in the future, an alternate disposal location will be provided by the proposer.
3. Contractual guarantees related to prices charged for disposal and limitations on future increases.
4. Participation by DuPage County in control over methods of disposal including design, operation, and maintenance in order to minimize long-term environmental risk to the County.
5. Contractual limits on risks to be incurred by DuPage County. Risk categories to be considered and allocated include construction; technological; waste supply; changes in law; short- and long-term environmental; and uncontrolled circumstances.
6. Sufficient financial backing and strength by the proposer to provide the above guarantees without affecting DuPage County current bond ratings.
7. Proven technical reliability and cost-effectiveness of the proposed disposal method.
8. Proposers must demonstrate the availability of a site meeting the above conditions, or the proposer's ability to provide local siting approval comparable to that of DuPage county and its municipalities within the borders of DuPage county.
9. Environmental design requirements should at least equal those for facilities proposed within DuPage County.
10. The total costs for disposal and transport to the

facility should be comparable to those for DuPage County facilities which may be implementable.

11. The option must conform to the requirements of Public Act 85-0990, because the Solid Waste Plan selecting the option must conform with this Act.

#### 3.3.4.2 Other Processing And Disposal Options

The initial planning effort for the Solid Waste Committee was Alternative Refuse Disposal Systems - Resource Recovery Phase 1 (February 1986). One of the purposes of the report was to review various solid waste disposal systems that were alternatives to the current (then and now) disposal method of sanitary landfilling. A shortened list of preferred waste management technologies which were viewed as representing commercially viable alternatives was derived.

Thirty alternative solid waste disposal technologies were reviewed and compared to the existing sub-regional sanitary landfill method of disposal. As a task for the scope of services, a rating matrix was developed. Factors considered in the matrix included:

1. Waste disposal independence;
2. Environmental considerations;
3. Economic considerations;
4. Implementation considerations;
5. Resource recovery considerations; and
6. Risk assessment.

The rating matrix did not assign a relative weighting factor (order of importance) to these factors at the time of report preparation. Instead, a survey of interested parties which had been involved in solid waste issues confronting the county was performed to develop a relative weighting of factors. Collating

the results of that survey resulted in the following relative weighting in descending order of preference.

1. Environmental considerations
2. Risk considerations
3. Resource recovery considerations
4. Economic considerations
5. Flexibility considerations
6. Implementation considerations
7. Disposal independence considerations

These relative weighting scores were applied to the matrix to select the best technology alternatives to receive additional study. Alternatives which represented a perceived betterment from existing conditions (existing sub-regional landfills) and scored accordingly were selected to receive further investigation. Three categories of waste processing/disposal, which did not pass this initial ranking, but are described in this subsection were composting, pyrolysis and bioconversion processes.

#### COMPOSTING

Composting is a method of solid waste management whereby the organic material is biologically decomposed under controlled conditions to a state in which it can be handled, stored, and/or applied to land without adversely affecting the environment. The key phrases in the definition are "biologically decompose," "controlled conditions," and "organic materials."

Composting processes can be grouped into three classes: 1) aerobic vs. anaerobic, 2) mesophilic vs. thermophilic, and 3) mechanized vs. non-mechanized systems. This third classification is often referred to as mechanical vs. windrow composting.

Composting processes that involve decomposition in the presence of air (oxygen) are designated as aerobic. Anaerobic composting is conducted in the absence of air. Anaerobic composting is similar to anaerobic digestion of sewage sludges. However, in composting the wastes are maintained in a solid state, whereas anaerobic digestion involves conditioning the wastes into a slurry of water and waste.

Aerobic composting has been the process of choice when composting of wastes is employed. Perhaps the overriding reason for this preference is that aerobic processing is not characterized by objectionable odor generation.

A second important reason for the selection of aerobic composting is related to public health and to the eventual use of the finished compost in crop production. Aerobic composting is characterized by the achievement of temperatures within the composting mass that are above the thermal deathpoints of most plant and animal pathogens and parasites that can be present in the wastes. These elevated temperatures also kill weed seeds. Anaerobic composting, on the other hand, is not characterized by a perceptible rise in temperature.

A third reason for the wide adaptation of aerobic composting is that, in general, a stable end-product can be achieved more rapidly than with anaerobic composting. Anaerobic processes require an aerobic stage to stabilize the intermediary products resulting from anaerobic composting. This is due to the fact that many of the organisms that rapidly break down the more resistant compounds in wastes are obligate aerobes.

Modern composting involves mesophilic conditions followed by thermophilic conditions. The heat energy responsible for the attainment of thermophilic conditions is the result of the release of heat by the action of the microorganisms. Mesophilic organisms

are those for which the optimum temperature is within the range of 8 to 50°C (46+ to 122F). Those organisms having an optimum temperature above 45°C (113F) are termed thermophilic.

As heat is produced during the mesophilic stage of composting it is dissipated at a slow enough rate to allow for its accumulation within the mass. As the temperature of the mass rises to the thermophilic range, a shift in the population of the organisms takes place which allows decomposition to proceed until available substrates are exhausted. As the available energy in the composting mass is consumed, the activity of the microbes declines, heat generation decreases, and temperatures fall to near ambient conditions.

The distinction between mechanical and non-mechanical composting is based upon the technology and materials handling aspects of the process. Mechanical composting utilizes an enclosed unit of some type which provides for control of the necessary environmental parameters. Non-mechanized or windrow composting involves stacking the material to be composted in elongated piles (windrows) and allowing the process to proceed therein.

In windrow composting, air is supplied either by mechanically stirring the mass or by forcing air into the mass. The forced-aeration method eliminates the need for stirring. Mechanical systems also employ some type of stirring or forced aeration.

At the time of preparation of Resource Recovery Phase 1 in 1985 very little information was available on the status of municipal solid waste composting projects in the U.S. Currently there is much interest in solid waste composting on a national basis but still little hard data on the long-term operation of such facilities.

The "1990 Project Survey Of Solid Waste Composting In The

U.S." (Biocycle 11/90) indicates 89 projects in various phases of development. The following summary of projects in design, under construction or operational shows the current status of such projects in the U.S.

	<u>Number</u>	<u>Total Tons/Day</u>	<u>Average Tons/Day</u>
1. In Design	10	1,540	154
2. Under Construction	14	3,090	309
3. Operational	10*	839	84
4. Pilot Projects	3	85	28

\*One facility described as research facility

The above information is interesting in the fact that it shows that although there is considerable interest in solid waste composting, there is still little hard operational data. Further, facilities which are operational are usually of relatively small size as evidenced by the average daily tonnage for operational facilities (150 tons/day). The largest operational facility in the U.S. at the time of the survey was the Agripost facility located in Dade County Florida with a design capacity of 250-300 tons per day and a future capacity of 800 tons per day. However, this facility is facing major difficulties in marketing its end product because of a lack of State certification due to the uncertainty over the classification of the material.

### PYROLYSIS

Pyrolysis is the thermal decomposition of organic matter in the absence of oxygen. It has been applied to many materials for the recovery of hydrogen and carbon products or for the recovery of energy generated from the combustion of these products. The products from a solid waste pyrolysis system are a fuel gas, oil, char/ash or any combination of these. The gas is usually a low to medium heating value fuel (300 to 600 Btu/ft<sup>3</sup>). The oil can have as high as 10,500 Btu/lb. heating value while the char/ash can have

up to 9000 Btu/lb. The system can be designed to maximize the yield of certain of the three products depending on what the objective is. For example, if running a gas turbine or gas engine drive on an electric generator is the main objective, then the production of fuel gas would be maximized.

In the 1970's there were as many as 17 companies or agencies actively investigating this concept. These included companies like Monsanto, Union Carbide and Occidental Research Corporation. Monsanto went so far as to design and construct a 1,000 TPD plant in Baltimore, Maryland, which was completed in 1975. The plant was plagued with problems from the start; one of the most troublesome being the inability to meet air pollution standards. Even after plant modifications were made in 1976, the lack of steady production forced Monsanto to abandon the project. The city operated the plant for a limited period of time at much reduced capacity (400 TPD) before halting production. The plant has since been dismantled.

Most of the other pyrolysis systems developed in the 70's never got past the pilot or demonstration plant stage. Union Carbide did construct a 200 TPD demonstration plant in South Charleston, West Virginia, but never built a commercial plant. The process used their "Purox" system which manufactures and utilizes pure oxygen on-site as part of the plant production system. The process was energy intensive, expensive and was dropped by Union Carbide when a market could not be developed.

Although there has not been any large scale projects for municipal solid waste pyrolysis units, there are two recent activities which deserve mention here.

1. There appears to be renewed interest, at least in a theoretical, it not demonstrated way, for the use of pyrolysis on scrap tires. The homogenous nature of this wastestream and the high Btu content may prove conducive to pyrolytic processing.

2. In late 1989, there was much attention paid to a new system, originating in St. Charles, Missouri, known as the "Swept 10" system by Frontier Industries. Reportedly, the firm had constructed a 10 ton per hour facility in Rock Island, Illinois and was performing operational tests.

### BIOCONVERSION

Bioconversion is a term developed to describe the biological conversion of biomass into a useable energy or material. Biomass includes a number of renewable resources of feedstock such as wood, crops, municipal solid waste, agricultural waste, cannery waste, animal manure, packing house waste, sewage sludge and even aquatic plants. The use of sewage sludge, animal waste and certain grain crops as feedstock for conversion has been in progress for quite some time, but systems utilizing solid waste for feedstock are relatively new.

The conversion processes can be described as primary thermochemical, primary biochemical and secondary conversion systems. The first utilizes elevated temperatures to directly convert biomass materials into recoverable energy or intermediate products. Combustion is considered in this class. Primary biochemical processes use microbiological species or their biochemical agents to convert feedstocks to fuel or to intermediate products. Secondary processes are defined as those which convert the intermediate products from a primary process into fuel products.

The direct thermal conversion processes for solid waste disposal have been discussed in previous sections and include combustion methods such as incineration and RDF burning systems that convert the waste material directly into heat. By partial combustion with air, refuse can be converted into fuel gas, oil and/or char/ash. This was discussed under the Pyrolysis section above. Primary biochemical conversion processes utilize biological

methods for producing energy. It has an advantage over thermal conversion processes in that biomass material with a high moisture content can be used as feedstock. High moisture content is a detriment for a combustion system. That is why biochemical conversion systems have been used so successfully for wastes like sewage sludge. This also explains why most of the systems that have been tested for disposal of solid waste usually involve mixing the refuse with a liquid waste such as sewage sludge. Solid waste is too dry (normally) for the digestion or fermentation process to proceed. The disadvantage over thermal conversion is the long time required for completion of the process.

The biochemical process can be divided into three categories:

1. Anaerobic Processes
2. Aerobic Processes
3. Enzyme Processes

Anaerobic fermentation is defined as the biological degradation of organic materials in the absence of oxygen. Aerobic fermentation is just the opposite; degradation of organic materials in the presence of oxygen. Enzymes are specific catalysts which mediate nearly all of the chemical reactions in a biological system. They are added to the biological process for the production of specific products usually the degradation of cellulose into glucose. The glucose product is a highly versatile fermentation feedstock and can be used in production of most fuels and chemicals.

As far as biochemical conversion of refuse is concerned, the anaerobic process is about the only one currently under development. The Federal government has funded a process at Pompano Beach, Florida for several years as an experimental project. Municipal refuse is shredded and classified, mixed with sewage sludge in an anaerobic digester where, after a period of

time, (usually 15-30 days) methane gas is produced from the fermentation process. This project was started up in 1978. The plant is sized to take up to 100 tons/day of processed refuse. The operator of the plant and the Gas Research Institute (a utility supported association) have recently announced their decision to commercialize the technology. The system is called "REFCOM" for refuse converted to methane.

A form of aerobic fermentation has been used for municipal solid waste composting. This was outlined above in the Composting section. The need to introduce oxygen is the reason for windrowing the compost and turning the piles over at regular intervals. This assures a good supply of oxygen for the fermentation process.

Secondary conversion processes are those that convert the gas or liquid products from primary biomass conversion into specific fuels or chemicals. In most cases this is methanol since it is a satisfactory fuel substitute for automobiles, boilers and gas turbines. Higher molecular weight alcohols such as ethanol can also be produced from the products of primary biomass conversion. Secondary conversion can be added to any primary conversion system that converts refuse to a gas or oil product. For example, the Pompano Beach, Florida process could be coupled to a secondary plant to produce methanol from methane. Obviously the capital expenditure and operating cost will increase significantly over that for a primary plant and must be justified economically by the revenues that can be earned from the sale of the final product or the savings that can be made from its use.

Most of the methods of producing synthetic fuel require large quantities of energy in the conversion process. For example, when ethanol is produced from corn, it is necessary to use a considerable amount of heat. Waste-to-energy plants have not been linked to the synthetic fuel industry since it usually is more efficient to utilize the recovered energy directly as steam or

electric power. It may be possible to utilize the steam from a mass burn incinerator or RDF fired power plant as a source of heat energy for this purpose but the synthetic fuel industry has not been very active in this country for economic reasons, i.e., the availability of low cost fossil fuels. While the 1973 oil embargo, and resultant leap in oil prices, did focus some attention on synthetic fuels, the momentum was short lived. Once it became obvious that energy prices were not going to continue the rapid escalation of the mid 70's and were not going to reach a level where synthetic fuels would be cheaper, it no longer appealed to the private capital market. Recent trends in crude oil prices may renew interest in this option but based on past history it can be expected that potential investors will be extremely cautious.

Since only a fraction of the municipal solid waste, on an "as received" basis, is potentially convertible to fuels and/or chemicals by biological means, a number of pretreatment technologies are employed. Physical processes include size reduction and physical separation of inorganic constituents. Size reduction increases surface area available for biological processes, improves mixability for material, increases bulk density and improves material handling aspects of the wastestream. Separation of inorganics reduces volume to be treated, reduces maintenance costs and removes material which could inhibit certain processes. Alkali pretreatment may be utilized before digestion to increase digestibility of lignocellulosic materials. Likewise, temperature and pressure pretreatment helps to break down cellulosic materials. Acid pretreatment is an effective method to hydrolyze the cellulose in lignocellulosic materials into simple sugars leaving the lignin portion largely unaffected.

### 3.3.5 Findings For Phase III Solid Waste Management Options

The options presented in Section 3.3 have been presented as possible disposal methods after the principal method of disposal in

DuPage County, landfilling at Mallard Lake and Greene Valley landfills, is no longer possible or when such disposal is limited. The implementation of Phases I and II would allow the availability of an extended timeframe (20+ years) to landfill at the sites if disposal volumes were limited to DuPage wastes as allowed by the November 28, 1990 amendments to the landfill operating contracts.

Various processing and disposal options have been examined in this Section with all having attributes which should be considered by the County in the future depending on the conditions at the time. As the County considers the possible implementation of these alternative processing and disposal options in the future, its decisions should be made within the context of State of Illinois' requirements for the management of solid waste including the State's hierarchy for solid waste management in effect at that time.

plan3

**SECTION 4.0**  
**EDUCATION AND INFORMATION SYSTEM**

4.1 GOALS AND OBJECTIVES

The County realizes the success in effective implementation of solid waste planning initiatives is dependent upon the generalized support and active participation of the public. A comprehensive education and public information program would develop the environmental awareness of the public, as well as stimulate the public to reassess and modify existing waste disposal behaviors and habits which are detrimental to the environment. The following broad-based program goals have been developed to increase and maintain public involvement and understanding of solid waste practices and issues:

1. Inform the public of the need for responsible management of solid waste. Awareness of the looming solid waste disposal crisis should stimulate public concern and responsiveness.
2. Describe the viable methods available for the responsible management of solid waste. The concept of integrated solid waste management should be repeatedly presented to the public.
3. Inform the public of what the County's program does to provide for the responsible management of solid waste. A description of the County's integrated solid waste management programs should be provided to the public, and reinforced regularly.
4. Educate and inform the public of what it can do to provide for responsible management of solid waste. Conscientious decisions about personal solid waste disposal should be encouraged.
5. Assist and support local efforts to inform the public of local programs for solid waste management. The County should build on local programs and coordinate municipal and waste hauler informational efforts concerning solid waste.

6. Provide ongoing positive reinforcement to the public for its responsible management of solid waste. Positive activity should be promoted and the public's involvement should be positively acknowledged.

County government cannot alone assure these goals will be accomplished throughout the county. Goal 5, which recommends assistance and support of local efforts to inform the public of programs, is viewed as central to overall program development. In consideration of program goals and implementation, it is not the intent of the County to reach every citizen with its information program. Rather, the provision of general information should be the direction which the County pursues. The detailed instruction of how citizens should participate in local programs should be the function of the local government. The County should strive to act as an information source while providing support material describing responsible waste management methods.

#### 4.2 SYSTEM ELEMENTS

The solid waste education and public information goals may be achieved through a combination of informational and promotional elements. An on-going balanced system of elements is necessary to accomplish lasting public action. The County's program goals and the associated benefits must be communicated to the general public continuously in order to motivate new county residents and reinforce the awareness of current residents. Proposed system elements include:

1. Public distribution of a newsletter. Updated and in-depth solid waste program information would be conveyed to a large audience at a relatively low expense.
2. Public distribution and/or access to mass appeal information material. A bibliography of printed and audio-visual materials and a county library of informational media produced internally or externally would be made available to local governments and

community awareness groups.

3. Fostering favorable local press relations. Dialogues with press members attending Solid Waste Planning Committee meetings, press releases for concise prepared announcements, and editorial board meetings to establish information conveyance relationships would facilitate this process.
4. Forums with special interest groups. Interaction among municipal and township governments, grass roots organizations, and business and trade groups would allow the County to effectively communicate it's message and solicit group member support for responsible solid waste management.
5. Establish and support a speakers bureau. Standardized presentations and the distribution of support materials at general public meetings and lectures would be available upon request.
6. School curriculum development and educational materials access. Educational programming for grades K through 12 would be encouraged so children may develop early personal solid waste awareness and positive behaviors while also influencing the awareness and behaviors of adults.
7. Promotional events and displays. Initiation and/or participation in public events would raise issue awareness.
8. Publicity campaigns. Contests, awards, or certificates aimed at various groups including schools, residents and businesses promoting particular themes would bolster interest and participation.
9. Regional and national exposure of the County's solid waste management program. Favorable exposure and coverage of innovative programming by the submittal of articles to journals and presentation of papers at conferences would establish credibility, attract and feed local interest, and instill a sense of community pride.
10. Mass media. Public service/public access programming and paid programming for special announcements would be pursued as a means to reinforce awareness.

Many of the categories above require the preparation of support materials. Topic-specific support materials, either

printed or audio-visual, would be essential in providing concise responses to public inquiry, as well as being able to furnish prepared messages for public presentations.

#### 4.3 RECOMMENDATIONS

Three education and information programming levels have been proposed for Plan-1990. The incremental phases range from minimal, through intermediate, to high profile levels. The implementation components of each level are listed below. After each component, the goals which it addresses (from Section 4.2) are listed. Required Actions to implement the recommendation as well as Expected Resource Demands follow. **It is recommended that the following components be implemented considering available resources.**

##### MINIMAL LEVEL PROGRAM

1. Resume printing of a Solid Waste Newsletter on a regular basis and distribute to individuals on an existing and an expanding contact list at the County. The Solid Waste Division ceased publication of its Solid Waste Newsletter in 1989. Since that time, general information in its activities have been sporadically reported through a County newsletter. (Addresses goals 1,2,3,4,6)

##### Required Actions

- a. Establish format and assign responsibility for editing.
- b. Develop a distribution approach.

##### Expected Resource Demands

- a. Staff: Minimal to marginal dependent on the level of artistic preparation.
  - b. Expense: Minimal but dependent on the distribution approach.
2. Provide mass appeal informational material. An extensive amount of public information materials exist in the public domain for use by interested parties. Every effort should be made to use this material while

realizing that the preparation of some locally specific material will also be needed. (Addresses goals 1,2,3,4,5,6)

Required Actions

- a. Catalog, evaluate, and utilize available material.
- b. Interview municipal staffs to determine local program support needs.
- c. Develop new material to satisfy local needs.
- d. Develop a distribution strategy.

Expected Resource Demands

- a. Staff: Development work can be extensive.
- b. Expense: Variable, dependent on material preparation and distribution.

3. Provide clearinghouse capability for information requests. It can be expected that the County will be solicited for waste management and environmental information not locally relevant. Through a mixture of its supply of locally relevant information, it would become a credible and diverse source of information. (Addresses goals 1,2,4)

Required Action

- Catalog and track availability of information by maintaining a solid waste library.

Expected Resource Demands

- a. Staff: Minimal, coordination of individual staff reference files required.
- b. Expense: Minimal.

4. Continue regular intergovernmental network meetings but strive for format which encourages local reports and attendance by elected officials. The County currently sponsors regular meetings of an intergovernmental network made up of local government representatives in order to exchange program information. The meetings are usually attended only by government staff. (Addresses goals 3 and 5)

Required Actions

- No additional actions required except format change.

Expected Resource Demands

- a. Staff: Minimal.
- b. Expense: Minimal.

5. Continue general meetings with public as requested. The Solid Waste Division staff now makes public presentations and attends meetings upon request and as resources allow. Although the audience which is reached is often limited, this activity is still viewed as important for public information purposes. (Addresses goals 1,2,3,4,5,6)

Required Actions

- a. Decisions by the Solid Waste Planning Committee have promoted a desire for committee member attendance.
- b. Consider standardization of presentations including preparation of topic specific support material (slides and videos).

Expected Resource Demands

- a. Staff: Variable dependent upon involvement.
- b. Expense: Variable dependent upon level of preparation.

**INTERMEDIATE LEVEL PROGRAM**

1. Develop and implement information programs for schools. Throughout the county there are various school programs currently in place. A concentrated effort to make developed programs available to teachers would be beneficial. Multiple programs must be developed in order to target various age groups. The motivation of children not only provides a long-term benefit in helping to modify future disposal habits but can also change current disposal practices by children applying "peer pressure" to their parents. (Addresses goals 1,2,3,4,5,6)

Required Action

- a. Contracting for curriculum development and presentation.
- b. Preparation of support material for various levels of school programs.

Expected Resource Demands

- a. Staff: Minimal if program development and

- implementation is contracted.
- b. Expense: Potentially high dependent upon level of development.

2. Develop and expand working relationships with grass roots and special interest organizations as well as trade groups. These groups can be very helpful in carrying information to their constituents. Trade groups can often provide additional resources including financing to help communicate information. (Addresses goals 5 and 6)

Required Actions

- a. Groups need to be listed and evaluated for interests.
- b. With limited resources, concentrate on trade groups which can bring leverage capability to program.

Expected Resource Demands

- a. Staff: High due to time requirements.
- b. Expense: Minimal.

3. Investigate and utilize resources available through public service/community access media outlets. Many communities now have various community access methods available including newspaper, radio, and, especially, cable television. Although the level of preparation and "technical look" may be limited, these channels of communication can be very effective. (Addresses goals 1,2,3,4,5,6)

Required Actions

- a. Establish working relationship and interest with one or two motivated and interested community access stations.

Expected Resource Demands

- a. Staff: High during initial development.
- b. Expense: Variable, but less than paid programming.

HIGH PROFILE PROGRAM

1. Initiate promotional activities. Promotional activities can be used to encourage new participants in responsible

waste management. Further, such activities can be particularly effective in encouraging commercial participants. Promotional activities may be complicated or as simple as the issuance of certificates. The first priority should be in the commercial segment in order to support the commercial outreach program if resources are limited. (Addresses goals 4,5,6)

Required Actions

- a. Formulate approach by evaluating target groups, message and expected effectiveness. This may require contracting with professional firm.

Expected Resource Demands

- a. Staff: Minimal to high dependent upon involvement.
- b. Expense: Potentially high but may be defrayed by business/trade organizations.

2. Solicit regional and national coverage by preparation of articles for journals and presentations of papers at conferences. This component can help establish regional and national interest in the County's programs. (Indirectly addresses goals 1,2,3,4)

Required Actions

- Prepare articles and papers.

Expected Resource Demands

- a. Staff: High.
- b. Expense: Minimal to marginal dependent upon conference attendance costs.

3. Develop mass media programs. This component is most appropriately used to reinforce environmental awareness. Because of the costs involved, the use of this component must be carefully considered. (Addresses goals 1,2,3,4,5,6)

Required Actions

- Contract with professional firm to develop marketing campaign which builds upon the preceding actions.

Expected Resource Demand

- a. Staff: High initially.
- b. Expense: High to extreme.

The County is currently performing activities in the minimal level program. As the County's program activities expand and resources develop, expansion of the education and information program to intermediate and high profile levels should be considered.

plan4

## SECTION 5.0

### DEFINITION OF PROPOSED SOLID WASTE MANAGEMENT SYSTEM

Figure 5-1 depicts the conceptual flow diagram for the County's proposed solid waste management system. It graphically presents the approach for waste management as discussed in Plan-1990. For illustration purposes, the figure uses waste generation data for the year 1995. The purpose for the figure is to show the relative effects on the wastestream as it proceeds through the proposed system. The example assumes for purpose of illustration that the systems discussed in Plan-1990 for Phases I and II are fully implemented.

Figure 5-1 and the text here summarizes the system extensively described in the appendices. The reader is encouraged to review the appendices for additional information.

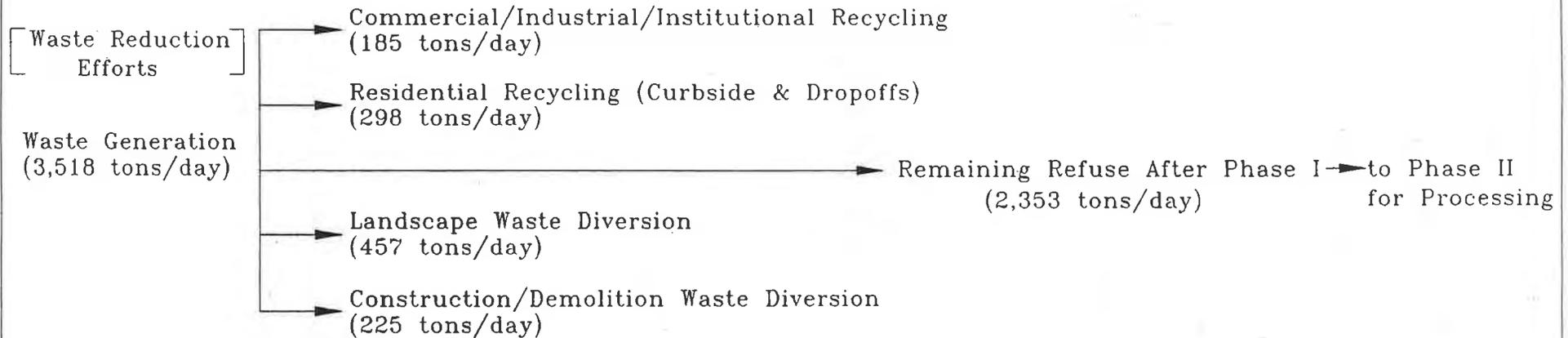
#### PHASE I

The first action shown under Phase I activities is "Waste Reduction Efforts." This action is not truly a waste management activity. It does not represent a technology or process to deal with waste. Rather, it represents efforts to prevent the creation of waste. There are three components encompassed in the term waste reduction. They are "source reduction", "waste prevention" and "pollution abatement." The first two components precede the actual production of waste. The third is an attempt to differentiate problematic materials and also prevent their production and use. As discussed in Appendix A-2, there are limited efforts that local governments can do to actually bring about changes in these components. Information campaigns aimed at these three components may help to minimize the effects in each but the measure of success is nearly impossible to gauge.

The total waste generation of the county (3,518 tons/day)

FIGURE 5-1

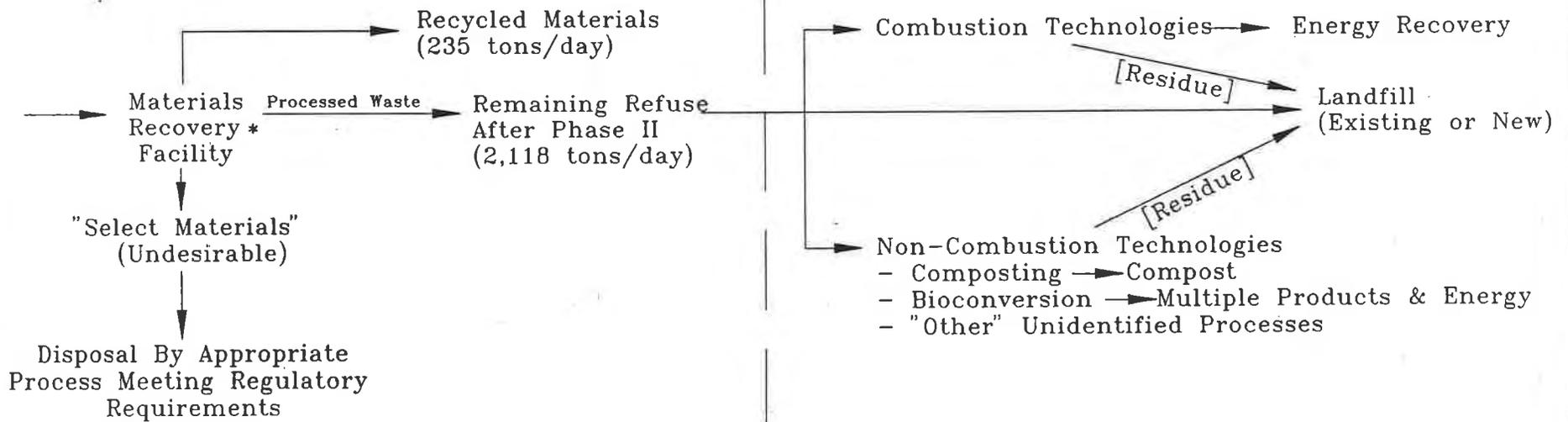
# CONCEPTUAL FLOW DIAGRAM FOR COUNTY'S PROPOSED SOLID WASTE MANAGEMENT SYSTEM -1995-



## PHASE I

### PHASE II

### PHASE III OPTIONS



\* Processing Facility

Phase III Located Inside or Outside County

would initially be sorted into several individual streams by source separation activities. These streams include residentially source-separated recyclables; commercial, industrial and institutional source-separated recyclables; source-separated landscape waste diversion; and source-separated construction/demolition waste diversion and recycling.

Residential recycling would be a function of curbside collection and drop-off programs. Commercial, industrial and institutional recycling would be a function of private collection programs to serve these entities. Landscape waste diversion would be a function of encouraging residents not to dispose of this material (leave it on the yard) as well as separate collection programs delivering the collected landscape waste to land application or composting sites. The recycling or diversion of construction/demolition waste would be a function of finding alternative uses for this material including reuse of materials and recovery of materials for alternative uses. Note that the total waste generation quantity assumes that "dirt, clay and sludge" (a category of waste now accepted at the two existing landfills) would not be included in the waste proceeding through the solid waste management system.

It is estimated that these activities, when fully implemented, would reduce the total waste quantity by 33 percent or, in this example, 1,165 tons/day leaving approximately 2,353 tons/day to proceed to subsequent phases. The following table summarizes the waste reduction effects of Phase I activities.

	<u>REDUCTION QUANTITIES</u>	
	<u>Tons/Day</u>	<u>% of Waste</u>
Residential Recycling	298	8.5
Commercial/Industrial/ Institutional Recycling	185	5.3
Landscape Waste Diversion	457	13.0
Construction/Demolition Waste Diversion	<u>225</u>	<u>6.4</u>
	1,165	33.2

## PHASE II

The 2,353 tons/day remaining after the source separation activities in Phase I would be routed to a materials recovery facility which will process the mixed wastestream to remove and recover additional materials. The purposes for the facility are both to remove certain materials which are not conducive to or desired in Phase III processes or disposal facilities (undesirable materials) as well as to recover (recycle) materials in the waste which were not source-separated in Phase I.

Recycled materials are expected to represent 10 percent of the incoming waste quantity although the percentage may increase if source-separation programs are ineffective. Materials removed because of their undesirable nature for Phase III are not assigned a reduction factor at this step due to the uncertainty over what these materials may actually be. For example, an undesirable material may be excess water but the level of removal cannot be estimated until the final processing/disposal step is defined. Similarly, it may be desirable to separate select waste materials viewed to be hazardous or otherwise undesirable at the general municipal waste disposal site and send them to an alternate disposal facility more appropriate for this type of material.

After the removal of materials in Phase II mixed waste processing there will be a remaining fraction of "processed" waste which can proceed to Phase III processing and disposal options. The remaining processed waste can exist in several states dependent upon the processing or disposal options to be used in Phase III. For example, Phase II processing may produce a fuel for combustion technologies (refuse-derived-fuel) if such technologies are selected for use in Phase III. The processed waste may be minimally changed (i.e. baled or even shredded) if the waste is to be landfilled. If the waste is to be sent to a non-combustion facility employing biological actions (i.e. composting) additional

processing may be required to prepare it as a feedstock. In summary, the level of processing employed after the desired recovery of materials for recycling at the processing facility is a function of the subsequent processing and disposal options employed in Phase III. Note that the materials recovery facility may serve a dual role as a transfer facility depending on the location of subsequent processing and disposal facilities.

After Phase II mixed waste processing there would be approximately 2,118 tons per day of processed waste remaining for further processing and disposal in Phase III. At this point in the system, the initial total wastestream requiring disposal will have reduced by approximately 40 percent.

### PHASE III

The 2,118 tons per day of processed waste remaining after the materials recovery by mixed waste processing could either be further processed or sent to final disposal in a landfill. Phase III activities might include either combustion or non-combustion technologies that can be used to recover energy in the remaining waste prior to disposal or, perhaps, other useable products (i.e. compost). Also, although not indicated in the figure some "residue" items might be reusable. For instance, combustion ash might be useable as an aggregate building material. Phase III might include a combination of all of the available options and use either existing facilities or new facilities. Facilities may be located inside or outside of the county.

plan5

**SECTION 6.0**  
**IMPLEMENTATION ISSUES**

**6.1 PROCESS FOR PLAN REVIEW AND APPROVAL**

The following steps describe the review and approval process for Plan-1990. Steps marked with an asterisk are required under Public Act 85-0990. For additional information on the public comment process, please refer to the DuPage County Solid Waste Management Plan-1990 Public Comment And Response Document.

1. Following receipt of the review draft plan, as prepared by staff, the Solid Waste Planning Committee issues the review draft plan for public review and comment.

**Plan-1990 was issued for public comment on October 1, 1990.**

2. The review draft plan is available for public comment for a period of not less than 90 days\*. The review draft plan shall be submitted for review and comment to the Illinois Environmental Protection Agency (IEPA); all DuPage municipalities; all area-wide planning agencies; and the County Health Department during this 90 day period.

**Public comment was opened on October 1, 1990 and closed December 31, 1990. Notice of opening the public comment period was published in the Daily Journal, Wheaton, Illinois on October 1, 1990. The review draft was provided to the Illinois Environmental Protection Agency; the Illinois Department of Energy and Natural Resources; the Northeastern Illinois Planning Commission; all DuPage municipalities; all DuPage townships; the DuPage Health Department; all County Board members; all municipal libraries; members of the Citizens' Advisory Committee; and to other interested parties. Plan-1990 was also available at County offices for review.**

3. During the 90 day public comment period, a formal public hearing\* on the review draft plan (and any proposed revisions) shall be conducted. The public hearing shall be scheduled on or around day 60 of the public comment period.

**A public hearing for Plan-1990 was conducted on December 12, 1990 at 7:30 p.m. in the auditorium at the County**

Complex in Wheaton, Illinois. Notices for the public hearing were published in the Daily Journal, Wheaton, Illinois on November 21, November 28 and December 12, 1990.

4. The review draft plan is reviewed consecutively by the Solid Waste Planning Committee, the Citizens' Advisory Committee, the County Board and other parties identified above, including the general public, during the statutory public comment period.

All of the identified parties were afforded the opportunity for review and comment on Plan-1990.

5. Following the public comment period and the public hearing, a final draft plan will be prepared containing any revisions deemed necessary as a result of public comment and Solid Waste Planning Committee deliberations. A document containing written responses to comments made during the public comment period shall also be prepared\*.

The review draft of Plan-1990 has been revised for the February, 1991 version. A separate document entitled DuPage Solid Waste Management Plan-1990 Public Comment And Response, February 1991 has been prepared.

6. The documents described in 5. will be approved by the Solid Waste Planning Committee and forwarded to the County Board for its consideration and adoption. The County Board is required to adopt a solid waste plan by March 1, 1991\*. If the County Board determines that it cannot adopt the solid waste plan as forwarded to it by the Solid Waste Planning Committee, it must return the solid waste plan to the Solid Waste Planning Committee for its review and consideration for changes.
7. Within 10 days of adoption by the County Board, the solid waste plan is to be sent to the IEPA for its review\*. The IEPA is afforded 90 days to review the solid waste plan\*. If returned by the IEPA, the County (and Committee) shall consider the recommendations, make appropriate revisions and adopt (the revised) solid waste plan by September 1, 1991\*.

Public Act 85-0990 further requires that the solid waste plan be implemented within one year of adoption and that the solid waste plan be updated at 5 year intervals.

## 6.2 SOLID WASTE PLAN IMPLEMENTATION AND ADMINISTRATION

The DuPage County Board is the implementing governmental authority for the County's solid waste management plan. The Waste Planning/Reduction Committee is authorized to prepare and implement the solid waste plan for the County. In this form the joint county/municipal committee serves as a standing committee of the County Board and directs action relative to the solid waste plan through the County Board. This process assures municipal input and participation during planning and implementation. For a discussion of the authorities granted to the County Board for implementation, refer to Section 1.3. Note that any amendments to the plan during implementation or at the required 5 year update must be reviewed and approved by the Waste Planning/Reduction Committee.

## 6.3 FUNDING

The principal method for the provision of funds to support the actions of the Waste Planning/Reduction Committee derive from the surcharge applied to landfilling waste in the county. Funds for the operation of the County's landscape waste composting site are provided by tipping fees at that facility. The landfilling surcharge is applied according to State limits for the use of solid waste planning and implementation activities. The County receives \$0.45 per cubic yard landfilled. Historically, this funding source has provided the County approximately 3 million dollars per year for solid waste planning and implementation since it was first applied in mid-1988.

Although the tipping fee surcharge has been the most reliable source of revenue for the County's solid waste efforts and will remain so as long as the two landfills remain open, funds from this source must be carefully directed as they are currently the only source of revenue for the Committee's activities. Also, the November 28, 1990 amendments to the landfill operating contracts

will impact the program funding level due to a change in the way waste receipt is recorded. Currently, waste is measured on a cubic yard basis at the two landfills but in 1992 the waste will be recorded on a tonnage basis.

The County, in 1992, would be allowed by State law to charge \$0.60 per cubic yard. However, the State law allowing the local surcharge uses an effective conversion rate of 2.11 cubic yards to a ton of waste in its calculation of surcharge rates and allows a local surcharge of only \$1.27 per ton. The actual conversion rate for cubic yards of waste to tons is closer to 3 cubic yards per ton.

The State purposefully decided to allow a cost preference to those operators who installed scales at their landfills in order to collect what the State believed to be more accurate data on waste disposal. However, the net local effect of this action is a sharp reduction in funding available for local programs. To illustrate this distinction consider the following:

<u>Waste Measured by:</u>	<u>DuPage Landfill Quantity (1992)</u>	<u>Allowable Surcharge</u>	<u>Resulting Annual Revenues</u>
- Cubic Yard	3,000,000	\$0.60	\$1,800,000
- Ton	937,500	\$1.27	\$1,190,625

It should be noted that although the above analysis might indicate that a reduction in waste disposal costs for residents might occur under this scenario, this is unlikely to happen. To some extent the difference is attributable to a mathematical exercise in conversion rates. Although there is a real reduction in money actually required to be set aside by the landfill operator, it is unlikely that this will translate to any noticeable savings by a homeowner because each household generates only about 2 tons of waste per year (3.5 lbs/capita/day x 365 days x capita/household ÷ 2000 lbs/ton). The net annual reduction per household would equal approximately one dollar per year ([2 tons/household/year x 3 cubic yards/ton x \$.60 cubic] - [2

tons/household x \$1.27/ton]). It is unlikely that this small reduction in fees will be passed along to the homeowner.

The County must consider revenue mechanisms which provide for long-term program support. The State limited surcharge amount should be supplemented at least to the level allowed if charges were applied on a cubic yard basis. This would be equivalent to a surcharge of \$1.27 per ton plus a separate local solid waste fee in an amount of at least \$0.53 per ton for a combined charge of \$1.80 per ton.

The County may consider the use of bonds or other lending mechanisms in order to provide for large capital costs where necessary while minimizing the annual payment for such a facility. Use of this method of financing will require future discussion.

If the method of final disposal or intermediate processing changes in the county, thereby affecting the availability or sufficiency of this funding source, then an alternative funding source(s) must be sought. Realistically, if DuPage waste is no longer landfilled at the landfills in the county or if other alternatives are provided in addition to the landfills, it is likely that the County will have implemented alternative disposal processes and will have implemented a system to recover expenses for its alternative disposal mechanism by applying a charge for the management and disposal of waste.

The County can also consider grant funding from available sources in the future to help affect costs. The County has already received a grant from the Illinois Department of Energy and Natural Resources for equipment at the County's landscape waste management operation.

#### 6.4 AMENDMENTS TO PLAN

As stated above, State law requires that solid waste plans be updated at least once every five years. However, it is likely that amendments to the plan may be made more often than that depending on local conditions. Whereas the five year update would most certainly be viewed as a major update by examining new population projections, assessing current waste disposal processes, and assessing current and future disposal needs, it may be appropriate for modifications of a plan prior to the required five year update. These modifications may be necessary to more effectively detail implementation steps. The DuPage approach to Plan-1990 is a good example of where this may be required considering the following.

Although the description of Phase I activities is relatively well defined in Plan-1990, the specificities for Phase II and Phase III activities (other than use of existing landfills) are not well defined. Therefore, prior to steps taken towards implementation of Phases II and III, the County's solid waste plan would require amendments. For example, prior to proceeding with a materials recovery facility as described for Phase II, an amendment to the plan detailing the site analysis, environmental and cost impacts and all of the other general planning issues required by State law would have to be approved. The approval process would conform to the plan approval process described above in Section 6.1.

Some activities for implementation will not require formal amendment to the plan so long as they conform with the intent and described framework of the plan. For example, annual funding levels for County assistance programs for recycling as discussed in Plan-1990 would not be expected to require formal plan amendment.

The decision of whether or not an action will require formal plan amendment following the process described in Section 6.1 will be made by the Waste Planning/Reduction Committee. Equal

membership of County and municipal officials will assure that the relative effects of amendments on each type of governmental unit are fairly considered.

#### 6.5 WASTE FLOW CONTROL AS AN IMPLEMENTATION ISSUE

Throughout the period of preparation and public comment on Plan-1990 the issue of waste flow control has been raised repeatedly by municipal officials. Some commenting parties have apparently interpreted Plan-1990 to say that recycled materials must be sent to the County's Intermediate Processing Facilities. Plan-1990 does not say that. It does not propose the general implementation of flow control on recycled materials. It also does not require County approval of the specifics of the municipality's program.

Plan-1990 does propose that the County should consider a process whereby those communities that do not provide for what are determined to be minimum levels of service (number of materials) for the collection of recycled materials should either be excluded from using County-designated disposal facilities or charged an increased rate for recycling actions that might be employed at a materials recovery facility. This is stated to serve as an inducement to implement collection programs throughout the county which collect materials for which there is a ready alternative to disposal provided by the Intermediate Processing Facilities. Plan-1990 further states that municipalities should strive to provide collection services which maximize convenience to the residents while considering collection issues for haulers, both kept in mind during the design of the County's Intermediate Processing Facilities.

"Flow Control" is discussed in relative terms throughout Plan-1990 as a means of providing the ability to collect waste generation/disposal data; as a way to restrict the delivery of

waste to that generated in DuPage; and as a way to guarantee the delivery of waste in sufficient quantity to financially support disposal facilities.

Plan-1990 uses the best and most current information available in the estimation of waste generation within DuPage County but recognizes that the available information is limited, especially for certain components of the wastestream (refer to Appendix A-1). Plan-1990 proposes that the implementation of a system to direct the flow of waste generated within DuPage would allow the County to start collecting actual waste generation and disposal data. This would allow for more precise calculation of data related to solid waste facility sizing and estimation of needs.

Plan-1990 assumes that new facilities for the management of solid waste provided by the County should be restricted to use by residents of DuPage. Plan-1990 also discusses the possibility of restricting waste at the two existing landfills. In order to effectively implement a policy of restriction, a method would have to be provided to at least track waste origination and disposal patterns. This need could be satisfied by the implementation of flow control authorities.

Finally, the guarantee of delivery of waste in sufficient quantity to recoup costs is fundamental to solid waste disposal facility contracting and financing. It is interesting to note that even the amendments to the landfill operating contracts contain "put or pay" provisions where the Forest Preserve essentially guarantees the delivery of a minimum amount of waste to the facilities. If the County desires to bid for alternative waste management operations in the future, one of the first requirements to attract bidders will be the County's ability to guarantee the delivery of waste contractually to the successful bidder and project developer. Therefore, if the County is to assume the responsibility for assuring waste disposal capability it must have

the ability to guarantee the delivery of waste to the designated facility(ies).

Two methods are evident to allow for the guarantee of delivery of waste. One method would be to negotiate intergovernmental agreements with each of the participating municipalities while the other method would be for the imposition of a controlling mandate at the County level. Both of these methods were discussed in detail in 1986 and 1987 by the Solid Waste Planning Committee. Legislation sponsored in 1987 by both the County and the DuPage Mayors and Managers Conference allows for the formal representation of representatives of the DuPage Mayors and Managers Conference on the Solid Waste Planning Committee and authorizes the imposition of "flow control" at the County level. The County is authorized to define the appropriate method of waste disposal for all waste generated within the boundaries of DuPage County.

Elimination of the references to flow control misrepresents available County authorities and, if such authority were abdicated, could place the County in a position of not being able to effectively negotiate for the provision of waste processing and disposal services. However, it must be stressed that the imposition of flow control would require additional formal action by the County Board. Such action would require endorsement of the Waste Planning/Reduction Committee, comprised of equal membership representing the county and municipal officials.

plan6

**SECTION 7.0**  
**PLAN OF ACTION**

**7.1 RECOMMENDATIONS FOR MAJOR ELEMENTS**

This Section provides the detailed recommendations for action as provided in Plan-1990. Except for the recommendations listed under 7.1.4 (Administrative), all of the recommendations provided below are copied directly from the detailed Appendices which support Plan-1990. Note that recommendations for the education and information system are provided in the preceding Section 4.0 and are not repeated here. Although a summary of the reasons for statement of these recommendations is provided below, for additional information on why a specific recommendation is made, the reader is strongly encouraged to refer to the subject Appendix.

7.1.1 Phase I - Waste Reduction, Recycling And Waste Diversion

WASTE REDUCTION

The burden placed upon a community's waste management infrastructure can be eased to a significant degree through the initiation of an aggressive waste reduction program. A waste reduction plan consists of three interrelated elements: 1) source reduction, 2) waste prevention, and 3) pollution abatement. The objective of the waste reduction component of the County's waste management system should be to facilitate the development and initiation of public and private sector programs which promote these three important activities. The following recommendations are proposed as a means of promoting waste reduction within DuPage County:

1. The County should encourage local industry to streamline the product design, manufacturing, and packaging processes they utilize by offering general information and technical assistance regarding source reduction practices. The County's role in this regard should be

that of facilitator, matching sources of information and/or service providers with companies interested in waste minimization. Advancement of voluntary source reduction policies in the private sector can be achieved through commercial outreach programs which target larger firms throughout the planning area. Local firms should be made aware of any programs sponsored by the State of Illinois intended to encourage the development and/or implementation of source reduction practices.

Beyond serving as an information clearinghouse and a referral service, the County's outreach program may eventually be tailored to address the needs or concerns an entire class of specialized commercial ventures involved in common field. Coordination of these targeted source reduction workshops focusing upon a narrow group of businesses could be accomplished through local trade conferences or chambers of commerce.

2. The County must promote waste prevention. Waste prevention practices entail giving preference to those products which are recognized as durable, non-toxic, and have minimal packaging. Waste prevention is distinctive from source reduction in that it is an activity which both private industry and the general public can partake. Individual citizens and purchasing officers from the private sector can, when well-informed, make a conscious effort to purchase environmentally sound products even if additional expense is involved. By avoiding merchandise which is over-packaged, contains harmful ingredients, or is designed for a single use and touted as being "disposable", consumers practicing waste prevention can help minimize the volume and toxicity of the wastestream. Moreover, by stimulating the demand for "environmentally friendly" goods, a waste prevention campaign becomes a logical extension of the County's effort to convince private industry that source reduction efforts will enhance product marketability.

A segment promoting waste prevention practices among private firms should be incorporated into commercial outreach programs which were previously discussed. To increase the general public's awareness of waste prevention, the County should initiate educational campaigns in cooperation with the State, municipalities, and local community groups. The impact of public education programs which encourage individuals to take environmental concerns into account when they shop may go well beyond simple waste prevention. In addition to encouraging people to shy away from over-packaged, potentially toxic, or single-use "disposable" products, waste prevention campaigns can persuade consumers to seek

out and buy goods which are packaged in recyclable containers and/or have recycled material content. Not only does this reduce the amount of non-recyclable packaging entering the wastestream, it increases participation rates for local recycling programs and strengthens the markets for the recovered materials.

3. As part of the County's waste reduction program, pollution abatement should be aimed at minimizing the negative impact of potentially hazardous refuse on the environment. Pollution abatement strategies focus upon diverting potentially dangerous materials away from conventional waste management systems which are ill-equipped to handle such waste. Regardless of the intensity and scope of waste prevention efforts, there will always be a certain quantity of "hard-to-handle" waste material generated within DuPage County. Once separated from the more benign portion of the wastestream, undesirable wastes can be reprocessed, recycled, or disposed of via specialized waste management systems.

The County should attempt to increase the general public's awareness of the need to divert these wastes from the municipal wastestream. In some cases, this task will entail promoting compliance with State statutes which prohibit the disposal of certain hard-to-handle wastes via the municipal wastestream (e.g. lead/acid batteries, used tires - after 1995). Diversion efforts for other materials will have to accompany the identification or development of alternative processing/disposal capability. Provision of acceptable means of managing these wastes may require cooperative ventures involving the municipalities, state agencies, and private firms. By virtue of its regional jurisdiction and legal authority over solid waste disposal methods, the County will be obliged to play a lead role in the development and coordination of such pollution abatement initiatives.

4. The County should make an effort to reduce the total amount of waste it generates and should minimize the use of highly toxic or disposable products whenever possible. While informing private firms and the general public about waste reduction techniques is obviously worthwhile, propagation of source reduction, waste prevention, and pollution abatement activities will not be optimized if the County fails to demonstrate its commitment to these concepts by "leading by example". This effort might begin with a intensive "in-house" audit of current procurement and disposal practices in order to identify those areas where there can be substantial improvement.

The result of this inquiry should be the formulation of a comprehensive waste reduction policy for the County. While the County's decentralized organizational structure may be a barrier to development and implementation of such a policy, a sustained commitment on the part of departmental leadership can help assure internal consistency between the County's stated waste reduction policy and its day-to-day operations.

## RECYCLING

DuPage County will implement a recycling system necessary to achieve the recycling rates that, at a minimum, meet the requirements of P.A. 85-1198. Achieving the minimum 25 percent recycling rate or greater will require considerable staff and funding resources, intergovernmental coordination, the active participation of private industry, and a change in the public's waste disposal habits. Resources are limited and must be allocated where they will create the greatest benefit. An effective and cohesive policy can be established through open communication and cooperation among all levels of government, as well as private enterprise. Modifying the disposal habits of DuPage County's citizens may be accomplished over time through public awareness and education activities. The recycling program is geared towards a reasonable rate of progress keeping in mind that the entire infrastructure to collect, process, and market the recyclables must be developed simultaneously.

The following recommendations summarize the key elements of the DuPage County recycling program concerning residential, commercial/institutional/industrial, public (governmental), construction/demolition, and wastewater sludge wastes. Because the elements are interdependent, each must be considered equally important to the overall success of the program.

### Residential

The residential sector has been the central focus of recycling

initiatives within DuPage County. Ultimately, participation among all DuPage households, including single family and multi-family dwellings, should be pursued. Convenient and permanent mechanisms will be essential in instilling and reinforcing recycling behaviors among DuPage residents. A number of adequate drop-off facilities, curbside collection programs, and intermediate processing facilities should be provided to meet residential recycling needs. Furthermore, material collection, processing, and marketing activities should be executed in a fashion which shall support effective recycling operations and ensure the reduction of disposable waste. The following recommendations have been developed to address residential recycling:

5. Facilitate the development of as many as 3 additional multi-material recycling centers (MRCs) before 1992. Dropoff facilities within the county are proposed to serve less densely populated areas in which curbside collection is deemed economically unfavorable and to provide collection capability made unavailable to curbside collection participants. In order to adequately blanket the county with three-mile radius dropoff facility capabilities, it is recommended that regions to host such facilities should include Naperville, Wayne and Winfield townships. The County should assist in MRC planning and development for new facilities, and assist in the continuance of existing facilities.
6. Incorporate standards for equipment, operation, and construction of multi-material recycling centers as described herein and oversee the administration of such standards. Standardization should be extended throughout the various existing and proposed facilities to ensure visitor and worker convenience and safety, operational efficiency, and structural durability. Compliance with recommended standards will be required of MRCs for eligibility of funding assistance by the County.
7. Pursue the implementation of curbside collection services to additional households within DuPage County. Curbside collection has been found to be the most desirable recycling method for densely populated, single family residential areas because of the high participation levels associated with this convenient service. Curbside collection services should be expanded to maximize the coverage of single family households. The County should encourage this action by units of local government which

have the primary responsibility to provide for such service.

8. Encourage dropoff facilities and curbside collection services to accept and market the maximum range of recyclable materials. In order to capture the highest possible levels of recyclable materials from the residential wastestream, the recovery of all materials normally expected to have secondary market value is encouraged when processing and marketing opportunities of such materials exist. In order to support the collection of new and varied materials, the range of materials accepted at the IPF will expand as material markets become available and regulatory controls allow for the collection and processing of the desired new materials. However, it is also realized that at certain times stressed market conditions may exist for certain recycled materials. The County should make efforts to bridge these stressed market conditions to the greatest extent possible rather than temporarily drop certain materials from the program.
  
9. Encourage the implementation of curbside collection programs which are designed for the convenience of the resident. The County has attempted to develop a regional system which provides maximum convenience for recycling to all involved parties including haulers, homeowners, and the government. The purpose for this is to encourage maximum participation. The use of a commingled collection system where the only separation required by the homeowner is paper from non-paper (but combined in one container for collection) removes the burden of sorting materials by the homeowner. Similarly, the IPFs are designed to effectively process materials delivered in this manner.

As the system is implemented, practices which may currently be required to ease the demands placed upon collection crews using truck-side sort programs, but requiring increased efforts by the homeowner, should be eliminated. For example, several communities now require residents to place paper at the bottom of the curbside container and discourage the use of kraft paper bags to contain the paper. This practice will be unnecessary in the County's system.

10. The use of County-designated disposal facilities should be prohibited or otherwise discouraged to communities not providing for the collection of the recyclable materials accepted by the IPF. The County views the materials which are to be accepted at the IPFs as the baseline minimum for materials which should be recycled locally.

The list of materials accepted at the IPFs should set the minimum standard for local collection programs. After processing capability is uniformly available throughout the county by the provision of at least two IPFs and allowing the phase-in of collection of additional materials via local collection contracts, communities which do not provide for this minimum standard for recycling should be denied access to County-designated disposal facilities. Alternatively, the County could assess a surcharge to provide for additional processing costs to capture materials at proposed materials recovery facilities for mixed municipal solid waste (refer to Appendix A-3) from these communities.

11. Begin construction of IPF 2 when IPF 1 is shown to be at 85 percent capacity and when funding is available. Additional processing capabilities will be necessary to handle the higher levels of recyclable material quantities generated from expanded curbside programs as well as satellite facilities. The second IPF will support the collection of additional recyclable materials diverted from the single-family and multi-family residential wastestream. The required time to construct the second IPF should be considered in the course of discussions of apparent loadings of the first IPF.
12. Facilitate the development of satellite dropoff facilities (SDFs) to address the needs of multi-family housing complexes. SDFs are an important component of the recycling system because the increased convenience of recycling within multi-family housing units should boost the overall participation level of residential recycling. Once the IPFs are available to process additional quantities of recyclable materials, the County should assist building managers and haulers of multi-family housing complexes in the development and coordination of SDFs.
13. Document the recycling levels of the residential wastestream. Documentation of recycling levels is helpful in evaluating and monitoring the progress of recycling activities. Local governments and independent recycling operators are encouraged to report residential waste generation and recycling volumes to facilitate regional planning. Documentation of recycling volumes will be required for eligibility of County-assisted solid waste funding projects.
14. Develop a county-wide public awareness and information program utilizing outlets for such dispersal of information. On-going public information campaigns and educational programming should be conducted to promote

and reinforce recycling and other preferred solid waste behaviors. Refer to Section 4.0 of the main Plan-1990 document for specific recommendations concerning public awareness activities.

15. Pursue additional funding resources. In addition to the landfill tipping fee surcharge, other funding opportunities shall be pursued to implement the proposed recycling objectives. Efforts shall be made to acquire grants or financial assistance made available through various governmental agencies, such as Illinois Department of Energy and Natural Resources (IDENR) and Illinois Environmental Protection Agency (IEPA), and private institutions. The County should implement a "solid waste system fee" collected at the point of processing/disposal to support all the categories of its solid waste management system.

#### Commercial/Industrial/Institutional

The commercial/institutional/industrial sector has a significant role in meeting the recycling and waste reduction needs within DuPage County. Various entrepreneurial possibilities and in-house resource recovery opportunities are present for private firms within the county. Although an active, hands-on County role may be unnecessary to secure private participation at this time, cooperative relationships and a atmosphere of voluntary participation should be fostered through increased communication and interaction between the County and private business. Recommendations for recycling within the commercial/institutional/industrial sector include the following:

16. Strongly encourage private business to actively pursue recycling and waste reduction practices, as well as to procure secondary materials. Although participation is voluntary at this time, private firms may conduct recycling activities to take advantage of economic benefits, to fulfill employee expectations, and to preserve its image as a corporate citizen. Awards of recognition to leading firms with exemplary programs and other incentives should be developed to encourage and reinforce positive recycling and waste reduction practices within the private sector. These programs can then be used as examples for similar businesses.

17. Expand the commercial/institutional/industrial outreach program. The outreach program has been designed to provide information on how to implement in-house recycling programs and to act as a matchmaker of recyclable waste generators and private firms that use these materials. Resources should be made available to respond to the rising demand from private business for consultation and coordination of preferred solid waste management programs.
18. Document the recycling levels from the commercial/institutional/industrial wastestream. Reporting activities shall be requested to facilitate regional planning and to monitor the progress of county-wide recycling activities. Documentation requests shall be concentrated among the larger waste producers. Data will be solicited through voluntary surveys among the constituents of recycling vendors, trade associations and chambers of commerce. The County may consider a licensing system for providers of recycling services in this sector to allow for the County to solicit information on levels of service.
19. Encourage the siting and development of the industries that use secondary materials in the DuPage County area. As extensive efforts are being made to recover and process recyclable materials, the same care should be devoted to supporting the development of markets which remanufacture such materials. In order to promote a stable marketplace for recoverable resources, the County should initiate efforts to develop markets for recyclables and to remove barriers to the utilization of recycled products.

#### Public Sector

The public sector will play an important role in expansion of the recycling system within the county. Governments should serve as role models for the entire community by demonstrating the design and implementation of recycling programs. The public sector should also make efforts to "close the loop" for recycling through the support of secondary materials markets. The following recommendations regarding recycling are proposed for the public sector:

20. Develop guidelines for the County's procurement of recycled products. The County Board shall establish and

adopt purchasing guidelines which cover paper products, plastic containers, and plastic building materials procured for usage by County offices. Content standards of selected paper and plastic products, including minimum percentages of recycled materials and post-consumer recovered materials, as well as budgetary and non-competitive considerations, should be incorporated within the guidelines. The use of such procurement standards by all local units of government should be encouraged by the County.

21. The County should itself practice and assist other local governments in the design and implementation of in-house recycling, waste reduction, and procurement programs. Staff consultation and informational resources from the Solid Waste Division should be made available to local governmental units. Also, intergovernmental forum topics should be devoted to the development of desired programs within local and county governments.
22. Document the recycling levels from the public sector's wastestream. Documentation of recycling levels is helpful in evaluating and monitoring the progress of recycling activities. Local governments and independent recycling operators are encouraged to report waste generation and recycling volumes within the public sector to facilitate regional planning.

#### Construction/Demolition Waste

This component of the wastestream originates from all of the above sectors: residential, commercial/institutional/industrial, and public sectors. In larger quantities, though, it often arrives at the disposal site in segregated loads. The reduction in this component of the wastestream will be critical in the County's ability to meet its recycling goals. The following recommendations regarding recycling are proposed for this component of the wastestream:

23. Goals for the reduction in this component of the wastestream should be parallel with other County recycling goals. The County should encourage steps leading towards a minimum reduction in this waste component of 15 percent in three years and 25 percent within five years. This action will require the active involvement of the Forest Preserve District in limiting the materials to be accepted at its landfill sites.

24. The implementation of programs to achieve the goals stated in recommendation 1 should proceed in a phased manner. The following methods to reduce or recover materials should be considered. They are listed in ascending order of anticipated costs for implementation.
- a. Non-acceptance of uncontaminated soil/clay at disposal sites unless used for cover operations or grading.
  - b. Limitation of asphaltic aggregate and concrete/brick and encouragement of recycling/re-use.
  - c. Limitation and diversion of wood products and similar products for alternative use.
  - d. Separation of mixed aggregate materials by size and classification for re-use.
25. Provision of equipment and facilities for construction/demolition waste recycling should be sought first from private developers. The implementation of any of the methods discussed in recommendations would logically first be incorporated at the present disposal sites. Other entrepreneurial interests may exist to provide facilities for this action throughout the county.

#### Municipal Wastewater Sludge

26. The Forest Preserve District should take steps to prohibit the landfilling of sludge in the county by 1997. Municipal wastewater sludge has not been specifically addressed in Plan-1990. However, as indicated in Section 4.0 of Appendix A-1, sludge, along with dirt and clay, represents a significant amount of waste currently disposed of at landfills in DuPage County. This material can be recycled by methods including land application and composting. This allows for two years of system development and five years for implementation and possible construction of alternative facilities.

#### LANDSCAPE WASTE

Through the enactment of Public Act 85-1430, the Illinois General Assembly has mandated the diversion of landscape waste from landfills throughout the State. While this important legislation will help extend the life span of existing landfills, the successful diversion of source separated landscape waste requires

the development of reliable alternative collection and processing capability for this component of the wastestream. As the principal solid planning agent for the area, the County must assume the responsibility for assuring that the infrastructure necessary for sustained compliance with Illinois Public Act 85-1430 is established and maintained. To achieve this goal, the following recommendations which address the provision of an integrated landscape waste management system for the planning area are proposed:

27. The County should work in cooperation with the State and the municipalities to intensify public education campaigns which promote landscape waste reduction and backyard composting. An effort should be made to encourage individual homeowners to manage more of the landscape waste they generate in their own backyards. By practicing landscape waste reduction techniques and composting, residents will not only save time and money, they will also help to relieve the burden placed upon the area's landscape waste diversion system. Intergovernmental cooperation should be utilized in order to mobilize the resources necessary to develop general program themes and publications which can be used as part of distinctive municipal programs tailored to meet the specific needs of each community.

One prime example of landscape waste reduction which should be strongly emphasized is the desirability of not collecting grass clippings for off-site disposal. The odor generation problems associated with the processing of grass clippings which were experienced at local composting and land application facilities during the months following initiation of the landscape waste ban is indicative of the inherent problems which are encountered when this material is source separated and collected for processing. All of the educational programs implemented within the County should address the advantages of leaving grass clippings on the lawn as a means of landscape waste reduction.

28. Efforts should be made to promote uniformity among the various landscape waste collection programs operating within the planning area. As the merits and weaknesses of the various approaches to collecting landscape waste become more apparent, the County should endorse those collection procedures which have been shown to provide the most efficient and effective service for local residents. The ultimate goal of this strategy should be

the establishment of baseline uniformity among the landscape waste collection systems operating within the planning area. By introducing some degree of consistency regarding collection methods and material preparation requirements, the difficulties that variations in these factors can pose for regional disposal facilities can be alleviated. The creation of relatively homogeneous landscape wastestream will simplify operations at regional composting and land application sites.

One case in point is the use of biodegradable bags for landscape waste collection. The concerns of composting and land application facility operators regarding the problems associated with plastic biodegradable bags served as the impetus for haulers to require homeowners to use paper bags for landscape waste collection throughout the County. While the paper bags are more acceptable than the plastic bags, there is conclusive evidence that landscape waste diversion systems which do not utilize single-use, biodegradable bags of any type tend to be more efficient. In order to avoid the problems and additional costs associated with this practice, the County should take appropriate steps to discourage the use of biodegradable bags for collection of landscape waste. Instead of utilizing the single-use paper bags, municipalities and waste haulers should move towards the use of durable rigid plastic containers as appropriate.

29. The County should monitor the adequacy of available landscape waste disposal capacity and (if required) continue to provide a processing facility for the diverted wastestream. The long-term capability of existing land application and composting facilities to accommodate the landscape discarded in DuPage County remains relatively untested at the time of preparation of Plan-1990. A lack of reliable information regarding landscape waste generation and per household set-out rates for the planning area makes it impossible to gauge the adequacy of available processing capacity.

What has become clear since the implementation of the landscape waste ban is that a vast majority of the municipalities have not developed an independent capability to reprocess landscape waste collected within their corporate boundaries. It is anticipated that the municipalities will continue to depend upon regional composting and land application sites for disposal of landscape waste. Moreover, it appears that the development and operation of a sufficient number of facilities will require cooperative efforts on the part of the public and private sector. Consequently, the

County should continue to monitor the availability of landscape waste disposal capacity and must act, both directly and in cooperation with the private sector, to assure the presence of adequate landscape waste processing facilities for DuPage County.

30. To assure maximum compliance with Illinois Public Act 85-1430, the County should continuously monitor and evaluate the efficacy the diversion system. The State of Illinois is the first in the nation to mandate the comprehensive diversion of landscape waste from landfills. The innovative nature of this policy lends itself to implementation difficulties. During the first year to 18 months of the diversion effort, all aspects of the landscape waste diversion effort - public education, collection, disposal - will endure an extended shakedown period. Problems ranging from clarifying the definition of landscape waste to development of end markets for compost will be addressed, often in an ad-hoc manner.

Even after the majority of the initial "bugs" have been worked out, the value of monitoring and evaluating the County's landscape waste diversion system should not be discounted. By maintaining an overview of the multitude of municipal collection systems and the processing facilities which they depend upon, the County may help local officials anticipate and avoid disruptions in service. To this end, the County should act both as clearinghouse for information and as a facilitator of candid intergovernmental communication regarding landscape waste collection and disposal alternatives. The County should also utilize its data gathering capability to obtain more accurate information regarding landscape waste generation rates for the planning area. The availability of this data will be crucial for the determination of the long-term landscape waste disposal capacity needs of DuPage County.

#### 7.1.2 Phase II - Materials Recovery By Waste Processing

This phase of the County's proposed solid waste management system includes the application of various materials recovery options after source-separation efforts. Although the implementation of Phase I will have a substantial impact on reducing the overall waste quantity to be disposed, further reduction in the wastestream is possible by the use of post-consumer mixed waste processing. **It is recommended that the County**

pursue implementation of a system which provides for materials recovery from the mixed wastestream by the use of waste processing technology. Specific recommendations for action include the following:

31. A siting study should be conducted to determine possible sites and select a site or sites. The siting study should consider the site criteria described in Section 5.0 of Appendix A-3 along with more specific criteria which may be developed at the time. The evaluation of sites should consider the availability of local waste disposal sites including the two existing landfills.
32. The desired performance criteria for the processing facility should be determined. In order to fairly evaluate vendor capabilities, the desired processing capabilities of the system should be defined. The principal goal for the facilities should be the recovery of recyclable materials. The capability to remove materials in order to reduce the apparent toxicity of the processed waste should also be evaluated. Additionally, the delivery standards for the disposal facility should be incorporated into the performance criteria to the greatest extent possible. A minimum goal of an additional reduction in the wastestream of 10 percent should be sought as a result of mixed waste processing. Future flexibility in the design of the system should be sought in order to be responsive to shifting materials market conditions and changes in final disposal facilities.
33. A survey of commercially viable technologies and vendors proposed to meet the performance criteria should be performed. An effective way to perform this evaluation is to issue a request for letters of interest from firms interested in providing such facilities to the County and through a series of interviews determining the relative capabilities of interested firms. This process can be used to develop a shortlist of vendors which the County views as capable to perform the desired services and qualified to submit bids for a project.
34. The County should consider implementing a system to direct the flow of waste to the designated materials recovery facility(ies) (Refer to discussion of Flow Control in Section 6.5). The implementation of materials recovery by mixed waste processing can be expected to represent a higher system cost than comparative disposal options which may be locally available and which do not employ materials recovery by mixed waste processing. For

example, it is likely that in the short-term it would be cheaper for waste haulers to dispose of waste at surrounding landfills where waste processing is not required.

In order for a project developer to avoid building a facility which is not used because of this higher standard of treatment imposed by the County and, consequently, cost, it can be expected that any bidder for the provision of such a facility would require the County to guarantee either a minimum delivered waste quantity or payment in lieu of waste delivery. Such requirements are referred to by the waste industry as "put or pay" guarantees and provide the financial guarantee to the facility developers that they will recoup their costs. A common way that government provides this guarantee to private industry is through the imposition of waste flow control provisions which mandate the flow of waste generated within the governmental jurisdiction to designated facilities.

35. The County should bid the provision of the defined materials recovery facility(ies) on a full service basis. Using this procurement approach the County can select a project developer which can design, build and operate the facility for a set cost (or series of costs). Under this method of selection, the project developer assumes responsibility for the design, construction and operation of the facility.

Recommendations made above regarding the bidding for the provision of facilities may not be required if the facilities are provided by the current landfill operators as a result of negotiations for the extension of operating contracts by the Forest Preserve District. This possible action will require further discussion as the continuing role of the two existing landfills in the County's long-term solid waste management system is defined.

### 7.1.3 Phase III - Final Waste Processing And Disposal

This phase of the County's proposed solid waste management system includes final processing and disposal components. There are four broad categories for waste management options after Phases I and II including waste transfer; combustion (waste-to-energy); landfilling; and "other" processing and disposal options including

out-of-county disposal. Some of these options are actually further processing methods for waste but are included as Phase III options because of their usual classification in the category of disposal. These options have been described in order to aid in future discussions on final processing and disposal methods. Any of the alternatives may be implemented in conjunction with use of the existing landfills. As the County selects new final processing and disposal options in the future, it will have to consider applicable regulations and State Statutes for such facilities, including the State's hierarchy of solid waste management, as well as the following recommendations.

#### WASTE TRANSFER

If it is determined that waste transfer is to be implemented, the following recommendations should be considered:

36. The availability of in-county disposal capability should be determined. If in-county disposal will be available for an extended period of time, the provision of transfer capability may be unnecessary. However, even if in-county disposal capability will be available for an extended period of time, the practicality and desirability of providing transfer capability in the county should be evaluated as a mechanism to improve waste transport efficiencies and to minimize local traffic impacts.
37. If waste disposal outside of the county is to be sought, the delivery requirements at the location for disposal should be determined. Although it is conceivable to site and construct a transfer facility which will allow for the transfer of waste to various disposal sites, it is preferable to know the delivery requirements of the specific site prior to construction of the transfer station(s).
38. If it is determined that transfer capability should be provided, a transfer station siting analysis should be performed. The analysis would include, at a minimum, the determination of waste generation profiles in the county and provide a site screening process to identify possible sites for the placement of one or multiple transfer station(s). Criteria to be used in the evaluation of

site(s) would include those discussed in Section 5.0 of Appendix A-4 as well as any more specific siting criteria developed prior to the start of the analysis.

39. Following the selection of a site or sites identified during the siting analysis, the implementation process generally described in Section 6.0 of Appendix A-4 should be implemented. The local siting approval and construction process will require 4 to 4.5 years to implement and this consideration should be factored in to relative waste management system time lines.

#### WASTE-TO-ENERGY

If it is determined that waste-to-energy is to be implemented, the following recommendations should be considered:

40. An intent to develop a project must be formally expressed. It has been shown that positive conditions exist for the development of a waste-to-energy project for DuPage County. However, such projects are not easily developed when considering the number of issues which must be addressed. There must be a level of commitment by local decision-makers to aggressively pursue the development of a project. This is true for both implementation by the local unit of government or private business interests which hope to serve the unit of government. Therefore, the first step in an implementation process is for the implementing bodies for the DuPage Solid Waste Management Plan, the Waste Planning/Reduction Committee and the County Board, to endorse project development. Further, the scope of the project and its place in the comprehensive solid waste management system must be defined.
41. The availability of energy markets should be addressed in conjunction with the decision of intent to develop a project. Energy market availability can change over time. Therefore, there is a clear need to assess the availability of energy markets at the time of the decision to develop a project.
42. A site (or sites) should be identified for the project. Site selection, as for any waste disposal facility, can represent one of the most contentious issues with which to deal. The issue does not usually become easier with time because of the increased pressure placed upon available land for other development purposes. This is especially true in DuPage County.

Site consideration and selection for waste-to-energy facilities is dependent upon energy markets but, careful consideration of energy markets can possibly lead to the identification of multiple sites. It is advantageous to project development to identify the site (or sites) as soon as possible.

The above recommendations are fundamental to the implementation of a project. Following these actions the implementation process described in Section 17.0 of Appendix A-4 can be implemented. Although not addressed in Section 17.0, the simultaneous provision of a disposal mechanism for residue from the waste-to-energy facility must also be included in project development. This may consist of a landfill in the county or a landfill located outside of the county.

#### LANDFILLING

The following recommendations should be considered relative to the provision of landfill capability for DuPage:

43. The availability of the two existing landfill sites must be ascertained. In Appendix A-1 it was stated that the two existing landfills, Mallard Lake and Greene Valley, have approximately 63,309 cubic (gate) yards of disposal capacity remaining at the end of July 1990. The manner in which this capacity will be utilized is central to the determination of the county's future solid waste management system. Plan-1990 has assumed that the two landfills will be filled to permitted capacity based on the intent expressed in the 1990 amendments to the operating contracts for the two sites.

The actions described for Phases II and III of the proposed solid waste management system will allow for an extended period of time for the operation of the landfill sites. However, at some future date the existing landfills will be filled to permitted capacity. Steps to provide for new landfill capacity will be required well in advance of the time when the existing sites will be filled.

44. If so decided, an intent to develop the project must be formally expressed. If it is determined necessary to develop a new landfill facility(ies) by the County, there must be a level of commitment expressed by local

decision-makers to aggressively pursue the development of the project. This is true for both the implementation by the local unit of government or private interests which hope to serve the unit of government. Therefore, the first step in an implementation process is for the implementing body for the DuPage Solid Waste Management Plan, the Waste Planning/Reduction Committee and the DuPage County Board, to endorse project development.

45. A site (or sites) should be identified for the project. The sites previously identified as potentially useable for landfill sites may not be available in the future. Therefore, a review of potential sites would have to be conducted at the time of discussions to proceed with project implementation.

The above recommendations are fundamental to the implementation of a landfill project. Following these actions, the implementation process described in Section 26.0 of Appendix A-4 can be implemented.

#### OTHER WASTE PROCESSING/DISPOSAL OPTIONS

Sections 30 and 31 of Appendix A-4 examine possible options for future solid waste disposal including out-of-county and private project alternatives and energy technology alternatives. These options may provide disposal opportunities in the future for DuPage County. However, the current level of development and status of technological and commercial viability are difficult to assess at this time. Therefore, no definite conclusion can be derived at this time for the future use of these options.

46. It is recommended that the County not preclude the possibility, until necessary, of using out-of-county disposal facilities, new private project facilities, or emerging technologies, if such facilities can meet the required assurances for environmental protection, financial commitments and long-term dedicated capacity. Prudent planning requires the County to assume that it must develop adequate long-term means to address the waste disposal needs of DuPage County residents. Although it may be possible to identify a facility outside of DuPage County or employing emerging technologies which would accept part or all of the county's wastes under acceptable terms, no facility with

adequate assurances has been identified to date, and it would not be responsible to act on the assumption that such a project will arise in the immediate future. If, indeed, such a project is identified and determined to be acceptable prior to implementation of the proposed waste-to-energy facility, the Plan can be modified at that time to reflect usage of such out-of-county disposal capacity.

47. The County, in order to assess possibilities, should encourage private project developers to approach it in an unsolicited manner to present potential projects.

#### 7.1.4 Administrative

The following recommendations deal more with administrative requirements rather than specific facilities. They are actions to support overall program implementation.

48. The County should consider providing a mechanism to direct flow of waste to the various identified waste management processes proposed in its solid waste management system (Refer to Section 6.5 for a discussion of flow control). At several locations throughout the appendices to Plan-1990 the advantages to providing a method to direct waste to a designated facility for waste management have been mentioned. In the simplest terms, such a system allows the County to insure that a certain waste type ends up at the appropriate spot for handling in its solid waste management system. However the advantages provided by a method to direct flow for determination of the waste management needs, success of the waste management system, and accountability for the necessity of systems should be obvious. Finally, as the County begins to implement waste management systems which may locally be more expensive than options available to haulers which may not offer the same degree of environmental responsibility, the County may want to prevent the "escape" of waste to these cheaper, but possibly less environmentally-sound, facilities. Public Act 85-14 provides the County with the authority to define the method of disposal for waste generated within the County. The authority is granted only after approval of a solid waste plan and would require the passage of an Ordinance by the County Board to enact.
49. The County will need to insure adequate funding for its aspects of the solid waste management system. In Plan-1990 there are functions which are assigned to the County, functions which may be assigned to the County in the future, and functions which are assumed to be addressed by private industry interests (possibly with

County sponsorship). The existing funding mechanisms for the County's solid waste activities are the surcharge imposed on landfilling and charges applied at the County's landscape waste compost site for the disposal of this type of material. The County will have to continue to examine its available funding sources in order to assure sufficient funds for the support of its programs.

50. The County should solicit letters of intent from border communities about their intended waste disposal. DuPage communities that are partially (33 percent population) within DuPage have been provided the option to participate in the County's program with no formal expression of intent for service. The County should in the near future attempt to better define the final service area for facilities by surveying the border communities for expression of intent.
51. The County must consider the implementation of additional Phase III facilities in the context of apparent availability of the two existing landfills. At the time the review draft of Plan-1990 was prepared the availability of the Mallard Lake and Greene Valley landfills was uncertain. Contract amendments approved by the Forest Preserve District on November 28, 1990 substantially clarified the future availability of the landfills.

Plan-1990 indicates that actions proposed under Phase I of the County's waste management program will apparently allow the two landfills to meet the twenty year planning period needs for the county. Phase II activities could further extend the availability.

Although Plan-1990 relies on the two landfills as the primary final waste disposal mechanism, there may be advantages to implementation of other options discussed for Phase III. The County should consider the relative advantages and disadvantages for proceeding with development of these options and consider the appropriate time(s) for implementation as soon as possible.

52. The County should consider a mechanism of providing mitigative measures for waste management facilities. During the public comment process on Plan-1990 the issue of host community benefits for the areas surrounding waste facilities was raised. The Waste Planning/Reduction Committee has agreed to evaluate and consider mitigation efforts for negative impacts associated with waste management facilities. The mitigation efforts will be considered for the "affected area" whose limits will also be considered by the

Committee during its discussion of the facility. Mitigation efforts for the two existing landfills are recognized as falling under the authority of the Forest Preserve District with no direct input by the Waste Planning/Reduction Committee.

## 7.2 IMPLEMENTATION TIMEFRAMES AND CONSIDERATIONS

Phase I activities of the County's proposed solid waste management system are already being implemented. Additional actions for implementation have been described in the above recommendations. The key dates to consider for implementation of the total recycling program are that the program must be capable of providing levels of at least 15 percent and 25 percent reduction in the total wastestream by the years 1994 and 1996, respectively, according to Public Act 85-0990. The current and proposed schedule for program implementation should assure compliance with this statutory requirement.

The anticipated timeframe to provide a materials recovery facility as proposed under Phase II of the proposed waste management system would be expected to take 2.5 to 3 years after a decision is made to enter detailed design. Preceding this decision would be several steps including site selection and procurement, as well as the possible requirement of local siting SB-172 review. These two activities alone could be expected to add approximately 1 year to implementation. This anticipated minimum timeframe of 3.5 to 4 years is within the recommended timeframe for implementation of the County total waste minimization efforts defined by Phases I and II. However, if the materials recovery facility is designed as a transfer facility to transfer waste out of the county to a (yet unidentified) disposal site, the time line will likely exceed the current contract timeframe for the principal method of disposal of DuPage waste which is landfilling at Mallard Lake and Greene Valley. This statement is not made for the purpose of recommending that Mallard Lake and Greene Valley remain open beyond current contract periods, but rather to show that the

provision of alternative disposal facilities could potentially result in a shortfall in local disposal capability.

For the provision of new final waste processing/disposal (Phase III) facilities the potential shortfall may be more acute. For instance, it is estimated that the implementation timeframe for a waste-to-energy facility would be at least 4.7 years after a formal expression of intent to develop a project. For a landfill, the expected timeframe would be nearly 5 years after expression of intent to develop a project.

These timeframes must be considered as necessary lead times from the point at which disposal capability will be unavailable or limited in order to avoid shortfalls in local disposal capability.

plan7

---

**APPENDIX 8-B**

**DUPAGE COUNTY SWMP  
VOLUME 2**

---

*February, 1991*

# DuPage County

## *Solid Waste Management Plan*

*Volume 2 of 4*

*Appendices A-1, A-2, & A-3*

Prepared For:  
DuPage County Solid Waste  
Planning Committee

Prepared By:  
Department of Environmental Concerns  
Division of Solid Waste



DuPAGE  
COUNTY  
RECYCLING  
PROGRAM

DUPAGE COUNTY SOLID  
WASTE MANAGEMENT PLAN

APPENDIX A-1  
NEEDS ASSESSMENT

1.0 INTRODUCTION.....1-1

    1.1 Purpose.....1-1

    1.2 Contents.....1-2

    1.3 Conversion Rates.....1-2

2.0 DUPAGE COUNTY AND THE PLANNING AREA.....2-1

    2.1 Background.....2-1

    2.2 Population Projections.....2-4

    2.3 Employment Projections.....2-7

3.0 EXISTING WASTE MANAGEMENT SYSTEM.....3-1

    3.1 Collection Practices.....3-1

        3.1.1 Northeast Illinois.....3-1

        3.1.2 DuPage County.....3-9

    3.2 Disposal Sites.....3-24

        3.2.1 Landfills..... 3-24

        3.2.2 Combustion.....3-26

    3.3 Import And Export Of Waste.....3-27

    3.4 Recycling And Composting In DuPage County.....3-30

        3.4.1 Residential Recycling.....3-30

            3.4.1.1 Curbside Recycling Programs.....3-30

            3.4.1.2 Drop-off Programs.....3-31

            3.4.1.3 Buy-Back Centers.....3-32

        3.4.2 Commercial, Industrial and Institutional Recycling.....3-32

        3.4.3 Composting and Landscape Waste.....3-34

        3.4.4 Overview and Summary.....3-35

4.0 WASTE GENERATION.....4-1

4.1 Previous Waste Generation Quantities.....4-1

4.2 Current Waste Generation Estimate Approach.....4-2

4.3 Generation Rates.....4-2

4.3.1 Residential.....4-3

4.3.2 Commercial/Industrial/Institutional.....4-5

4.3.3 Construction/Demolition.....4-6

4.3.4 Summary.....4-7

4.4 Waste Quantity Projections.....4-8

4.4.1 Quantity Estimates.....4-8

4.4.2 Considerations For Application Of  
Waste Quantity Projections.....4-9

5.0 NEEDS ASSESSMENT.....5-1

5.1 Existing Disposal Capabilities.....5-1

5.2 Effects Of Revised Agreements For Operation At  
Mallard Lake And Greene Valley Landfills.....5-3

5.3 Summary.....5-6

**SECTION 1.0**  
**INTRODUCTION**

**1.1 PURPOSE**

The information included in this Appendix establishes a basis for development of a long term solid waste management plan for DuPage County. The Appendix is structured to meet needs assessment requirements set forth by the Illinois Environmental Protection Agency (IEPA) as activities under a solid waste planning grant.

The purpose of this Needs Assessment is to collect and collate as much information as possible concerning the amount of waste generated in the planning area; the methods by which that waste is disposed; the remaining capacity at disposal sites used by entities in the planning area; and the movement of waste into and out of the planning area.

The amount of waste generated during the planning period which cannot be disposed of by existing capabilities is defined as a "waste disposal need" during the planning period. Plan-1990 addresses waste generated in DuPage (and its border communities) and assesses the disposal need for DuPage. Waste which is currently exported out of the county for disposal in surrounding counties is considered as DuPage waste subject to this assessment of needs. Alternatives are then evaluated in the solid waste planning process to provide for the waste disposal need as well as a program for waste reduction, recycling and diversion. A variety of alternatives may be evaluated for solid waste management during the solid waste planning process. However, the State of Illinois has established a hierarchy for future waste disposal in the State. While realizing that landfilling of waste will still be required, the State of Illinois, in Public Act 84-963, established a hierarchy designed to minimize landfilling in the future. The hierarchy, listed in descending order of preference, includes:

1. Waste reduction at the source;
2. Waste reduction by recycling and reuse;
3. Combustion with energy recovery;
4. Combustion for volume reduction only; and
5. Landfilling.

## 1.2 CONTENTS

This Appendix is divided into five sections. The first section includes an introduction describing the purpose and contents of the report.

Section 2.0 describes DuPage County and the planning area. The second section also provides population and employment projections for the planning area. A general description of DuPage County demographics may be found in Appendix C-1, the DuPage County Solid Waste Management Summary Feasibility Report, and is not repeated herein.

Section 3.0 provides information describing current solid waste management systems in the planning area. The section describes waste collection, transportation and disposal practices as well as current recycling activities.

Section 4.0 provides projections for waste generation in the planning area. A description of waste characteristics is also provided.

Finally, Section 5.0 examines current and future waste generation factors coupled with existing and planned capabilities in order to provide an assessment of existing disposal capabilities and future needs.

## 1.3 Conversion Rates

Throughout this Appendix waste quantities are discussed in

"tons" and "yards" or "cubic yards". The glossary contains definitions for conversion rates.

appal-1

**SECTION 2.0**  
**DUPAGE COUNTY AND THE PLANNING AREA**

**2.1 BACKGROUND**

Located in northeastern Illinois, DuPage County is bordered by Cook County to the east and north, Kane County to the west, and Will County to the south. Figure 2-1 illustrates the location of DuPage County within the State of Illinois. DuPage County's boundaries encompass 332 square miles. The county is divided into nine townships and includes 35 incorporated cities or villages, 23 of which lie wholly within the county. A map of the county identifying the location of individual municipalities is presented as Figure 2-2.

Twenty miles west of Chicago, DuPage County's proximity to the highly urbanized areas of the greater Chicago metropolitan area has historically had a significant impact upon its solid waste management system. DuPage County itself has become more metropolitan over the past 15 years. The major catalyst fueling this change has been the impressive amount of economic development occurring within the planning area. DuPage County has enjoyed an expansion in a variety of commercial sector activities ranging from manufacturing to retail services. Several large corporations have located their home offices and/or research centers within the area. The economic prosperity experienced within the DuPage County over the past ten years has had a clear impact upon its demographic characteristics as well as important implications for this planning effort.

The impressive growth rates experienced in DuPage County since the early 1980's have established it as one of the fastest growing counties in the Midwest. According to projections made by the Northeastern Illinois Planning Commission (NIPC), this expansion is expected to continue over the next twenty years. This rapid

FIGURE 2-1

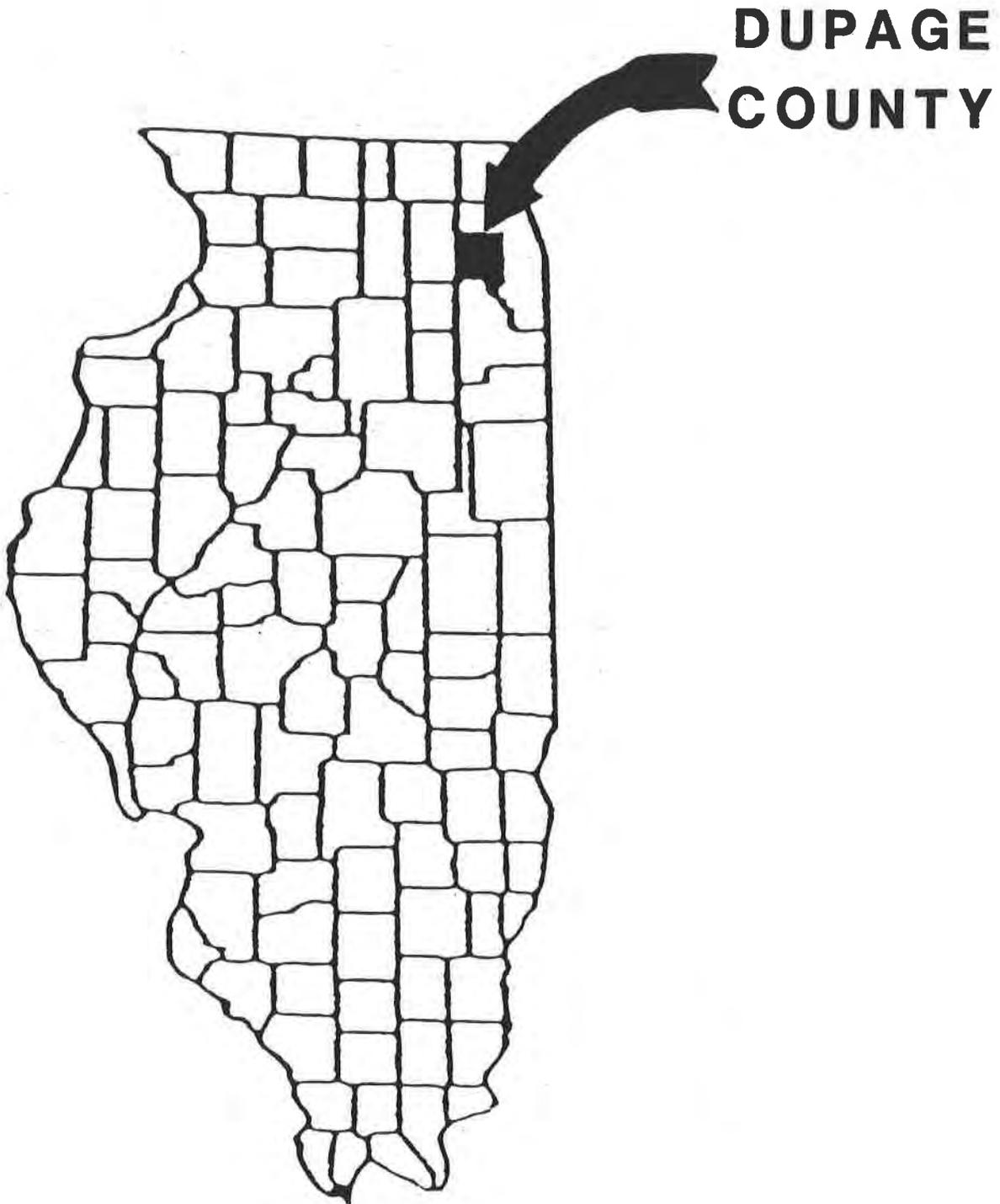
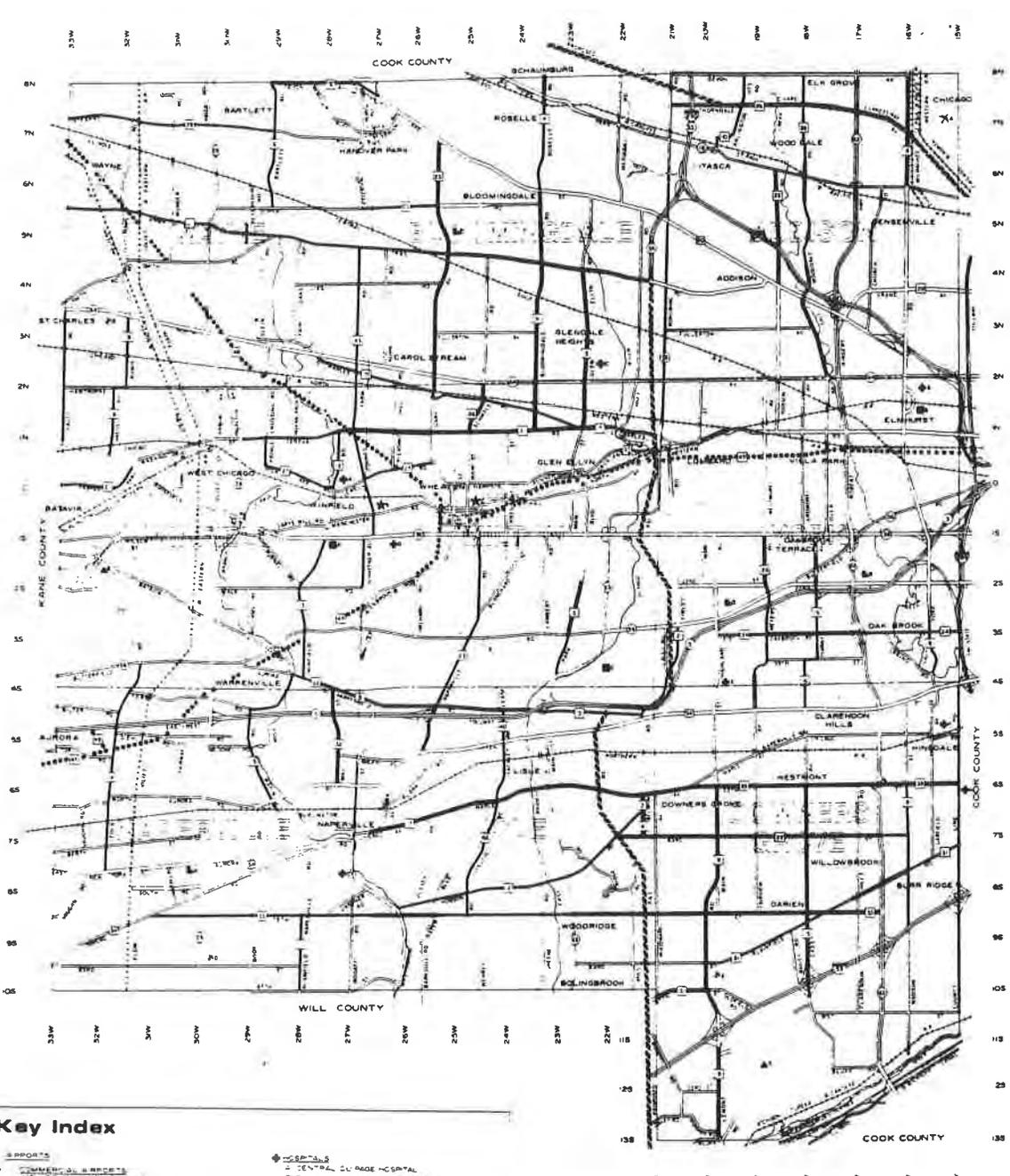


FIGURE 2-2

# DuPage County



### Key Index

- AIRPORTS**
- X COMMERCIAL AIRPORTS
  - CHICAGO INTERNATIONAL AIRPORT
  - OTHER AIRPORTS
  - (1) DU PAGE AIRPORT
  - (2) SCHAUMBURG F.I.E.D.
  - (3) BERK ESTATES (PRIVATE)
  - (4) LAKE BROOK RIDGE (PRIVATE)
- GOVERNMENT FACILITIES**
- ★ DU PAGE COUNTY GOVERNMENT
  - A COURSE CENTER HEALTH DEPARTMENT
  - CONValesCENT CENTER YOUTH HOME
  - ANNUAL CONTROL HIGHWAY DEPARTMENT
  - U.S. DEFENSE COUNTY JAIL SHERIFF
  - (1) COURT HOUSE PROBATION DEPARTMENT
  - (2) PUBLIC DEFENDER STATE ATTORNEY
  - (3) COUNTY HISTORICAL SOCIETY MUSEUM
- UNITED STATES GOVERNMENT**
- (1) ARGONNE NATIONAL LABORATORY
  - (2) FERMI NATIONAL ACCELERATION LABORATORY

- HOSPITALS**
- CENTRAL DU PAGE HOSPITAL
  - (1) ELMHURST HOSPITAL - MEMORIAL HOSPITAL OF DU PAGE
  - (2) EDWARDS HOSPITAL
  - (3) GLENDALE HEIGHTS COMMUNITY HOSPITAL
  - (4) SMOOD SAMARITAN HOSPITAL
  - (5) HINSDALE HOSPITAL
  - (6) MARION JOY REHABILITATION HOSPITAL
  - (7) SUBURBAN HOSPITAL
- SHOPPING CENTERS**
- (1) RYAN WALKER CENTER
  - (2) JIM BRIDGMAN CENTER
  - (3) STRATFORD SQUARE
  - (4) GORTOWN CENTER
- POINTS OF INTEREST**
- A: CANON ROBERT R. MCCORMACK MUSEUM
  - B: ZADOK MUSEUM OF LAPIDARY ART
  - C: MORTON AIRPORT MUSEUM

### Legend

- TWO LANE ROAD
- FOUR LANE ROAD
- DIVIDED HIGHWAY
- PROPOSED ROAD
- RAILROAD
- COUNTY ROUTE
- STATE ROUTE
- U.S. ROUTE
- INTERSTATE ROUTE
- COUNTY BOUNDARY LINE
- TOWNSHIP BOUNDARY LINE
- DUNAGE HERITAGE (ILLINOIS PRAIRIE PATH)



fluctuation in the demographic characteristics of the planning area will necessitate the continuous monitoring of population and employment trends. This activity would be especially important prior to the construction of any large scale disposal facilities.

## 2.2 Population Projections

According to the U.S. Census Bureau, approximately 658,876 people resided in DuPage County in 1980. Recent projections indicate that the population will have climbed to 813,806 by 1990, an increase of over 23% in just ten years. By the year 2000 the population is expected to increase another 6% to approximately 922,631 people. Table 2-1 illustrates the population trend for the planning area based upon projections developed by the DuPage County Planning Department. While this analysis seems to show a gradual leveling of the population increases experienced during the 1980's, the number of individuals establishing residency in DuPage County will steadily increase well into the next century.

**TABLE 2-1**

**DUPAGE COUNTY  
POPULATION PROJECTIONS**

<u>YEAR</u>	<u>POPULATION</u>	<u>CHANGE</u>
1980	658,858	-
1985	713,540	+ 8.3 %
1990	781,200	+ 9.5 %
1995	847,600	+ 8.5 %
2000	901,178	+ 6.3 %
2005	936,300	+ 3.9 %
2010	985,000	+ 5.2 %

SOURCE: DuPage County Planning Department

The primary force behind the sustained increase in the population of DuPage County is the healthy local economy. Considered to be one of the most affluent counties within the United States, the per capita income for DuPage County residents was estimated at \$16,924 in 1987. The economic prosperity experienced within the area has important implications for this planning effort. For example, the relative affluence found within the county will translate into a higher than average per capita waste generation rate.

A significant increase in the total assessed valuations for the county has accompanied this steady economic growth. During the 1980's, the total assessed valuations for DuPage County more than doubled - exceeding \$12 billion by 1989. Table 2-2 offers a more detailed representation of the change in the total assessed valuations for the planning area from 1980 to 1989.

**TABLE 2-2**

**DUPAGE COUNTY  
TOTAL ASSESSED VALUATIONS**

<u>YEAR</u>	<u>TOTAL ASSESSMENT (Millions)</u>	<u>CHANGE</u>
1980	\$ 5,572	-
1981	\$ 6,324	+ 13.5 %
1982	\$ 6,712	+ 6.1 %
1983	\$ 6,872	+ 2.4 %
1984	\$ 7,085	+ 3.1 %
1985	\$ 7,458	+ 5.3 %
1986	\$ 8,116	+ 8.8 %
1987	\$ 9,486	+ 16.9 %
1988	\$ 10,641	+ 12.2 %
1989	\$ 12,099	+ 13.7 %

SOURCE: DuPage County Clerk's Office

A portion of this increase can be attributed to the construction of residential dwellings intended to house the influx of individuals finding employment within the county. By 1985 a total of 169,040 single family households and 83,010 multiple family households had been established in DuPage County (67% and 33% of the total, respectively). Projections made by the Planning Department indicate that we can expect the total number of households to increase by about 33% by the year 2000. The growth in the number of multiple family dwellings during this period is expected to narrow the gap between single family and multiple family households. By 2000 it has been estimated that there will be 202,210 single family units (39.6%) and 334,640 multiple family units (60.4%). Table 3-3 illustrates in full the predications made by the Planning Department with regards to housing trends, breaking down the total number of households into multiple or single family units when said data was available.

**TABLE 2-3**  
**DUPAGE COUNTY**  
**PROJECTED NUMBER OF RESIDENCES**

<u>YEAR</u>	<u>SINGLE FAMILY</u>	<u>MULTIPLE FAMILY</u>	<u>TOTAL</u>	<u>CHANGE</u>
1980	153,843	80,845	234,688	-
1985	169,040	83,010	252,050	+ 7.4 %
1990	n/a	n/a	288,533	+ 14.5 %
1995	n/a	n/a	315,882	+ 9.5 %
2000	202,210	132,430	334,640	+ 5.9 %
2005	n/a	n/a	343,880	+ 2.8 %
2010	213,900	154,500	368,400	+ 7.1 %

SOURCE: DuPage County Planning Department

### 2.3 Employment Projections

One of the manifestations of the planning area's economic strength is the steadily increasing number of people finding jobs within DuPage County. Employment projections issued by the Planning Department for a thirty year period from 1980 to 2010 are featured in Table 2-4. These calculations reveal that in 1985 approximately 376,630 people were employed by firms located within the county. Projections show this figure increasing to 415,857 (up 10.4%) by 1990. The rapid expansion of the job market within DuPage County is expected to continue throughout the 1990's. By the year 2000, the estimated number in the work force will have reached about 521,600 - a dramatic 28% increase in just 15 years. Employment statistics are extremely valuable as a means of gauging commercial waste stream generation rates.

**TABLE 2-4**

**DUPAGE COUNTY  
EMPLOYMENT PROJECTIONS**

<u>YEAR</u>	<u>EMPLOYMENT</u>	<u>CHANGE</u>
1985	376,630	-
1990	415,857	+ 10.4 %
1995	460,112	+ 10.6 %
2000	521,600	+ 13.4 %
2005	591,306	+ 13.4 %
2010	688,420	+ 16.4 %

SOURCE: DuPage County Planning Department

**SECTION 3.0**  
**EXISTING WASTE MANAGEMENT SYSTEM**

**3.1 COLLECTION PRACTICES**

3.1.1 Northeast Illinois

The Northeastern Illinois Planning Commission (NIPC) published its first report on regional solid waste in 1963. At that time, 10 incinerators and 72 land disposal sites were operating within northeastern Illinois. NIPC reported that only approximately one third of the disposal sites were sanitary landfills, whereas, unsightly open dumps and swine feeding were commonly practiced.

NIPC presented its "Regional Solid Waste Management Plan" in 1976 to recommend a strategy for approaching areawide solid waste management problems. At that time, 30 land disposal sites and 4 incinerators were operating within the region. The primary reason cited for the decrease in the availability of waste disposal facilities was the stricter Illinois Environmental Protection Agency (IEPA) regulations on both land disposal facilities and sources of air pollution. Although the NIPC report in 1976 determined that the region was not facing a crisis situation, it recommended that advanced steps should be taken to plan for future needs. The problems and issues in providing such planning are outlined within the DuPage County Solid Waste Management Summary Feasibility Report.

NIPC presented a revised "Solid Waste Management Plan for Northeastern Illinois" in 1986. The preface commented that the solid waste management system in northeastern Illinois was in a state of transition. Although the plan indicated that the dominant method of disposal had continued to be landfilling, NIPC recognized the possibility of dramatic changes in disposal systems if policies being formulated and adopted by local governments were

implemented. The report estimated that if a broader range of disposal strategies, including waste to energy, recycling and composting, was carried out, the portion of the waste stream which is landfilled could potentially be reduced from 94 percent to 50 percent or less by the year 2000.

In October 1990, the IEPA prepared its fourth annual report on "Available Disposal Capacity for Solid Waste in Illinois." This report indicates that northeastern Illinois, or Region 2, currently has 25 active solid waste landfills and 1 waste-to-energy facility. These facilities are listed in Table 3-1 and their locations are shown in Figure 3-1. The region's landfills reported a total available capacity of 167,707,092 cubic yards as of April 1, 1990. Table 3-2 provides a summary of disposal practices by county. Available data on landfill capacity and disposal volumes was used by the IEPA to estimate the life expectancy of the existing solid waste capacity in northeastern Illinois. The IEPA report contends that at current disposal rates, the region's capacity is likely to be exhausted between 1995 and 1997. This estimate does not include possible waste reduction impacts through waste diversion and recycling activities expected to occur in the next several years. Although some disagreement exists in the interpretations in the IEPA report, the conclusion that a near-term shortage for solid waste disposal capacity exists is valid.

Provision of additional disposal capacity within northeastern Illinois has been considerably limited in recent years. The most often cited factor affecting the provision of new or expanded waste disposal facilities in Illinois is Public Act 82-682, "An Act Related To The Location of Sanitary Landfills and Hazardous Waste Disposal Sites" (SB-172).

**TABLE 3-1  
SOLID WASTE DISPOSAL CAPACITY IN NORTHEASTERN ILLINOIS  
AS OF 10/90**

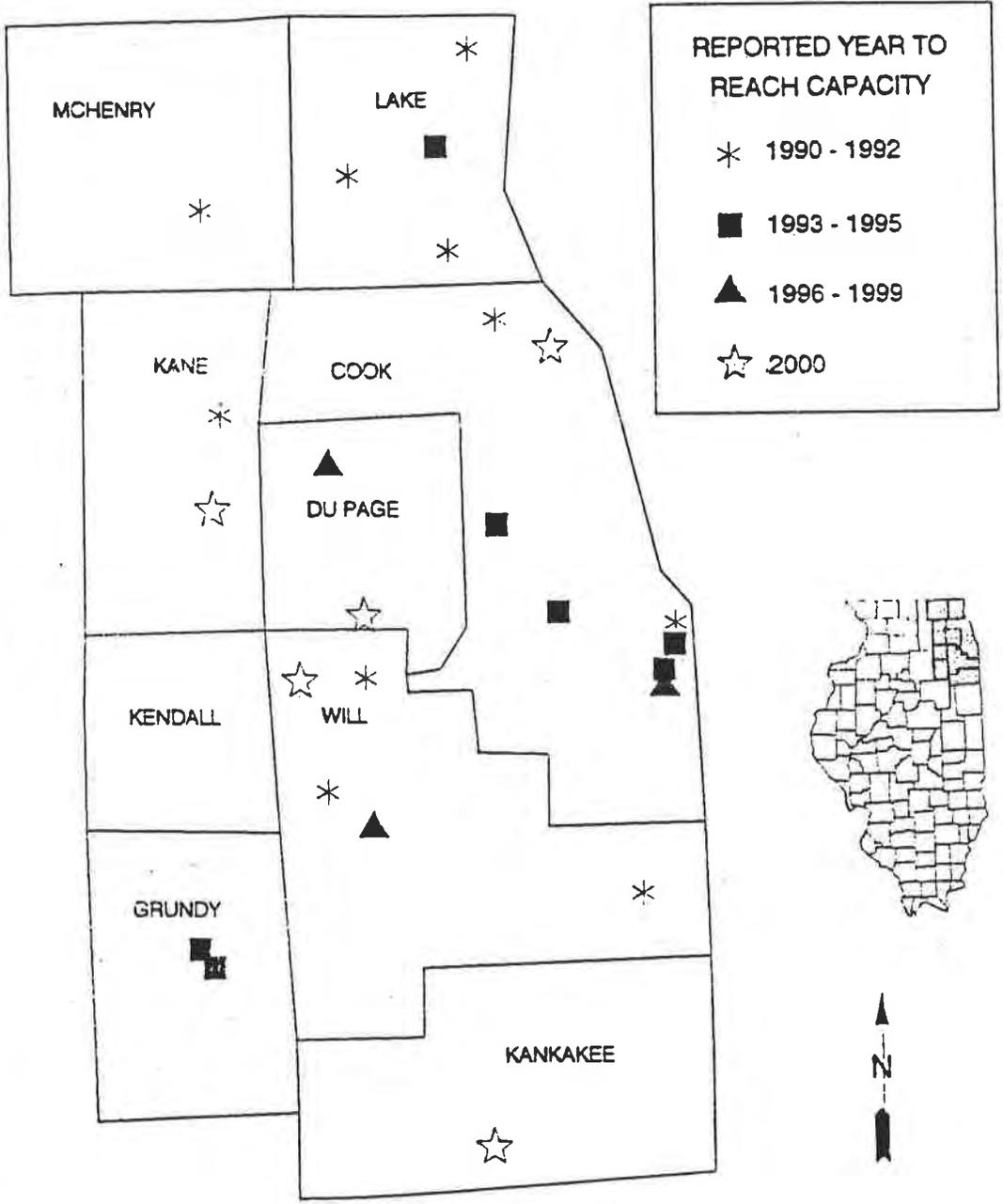
Facility (reported)	Remaining Capacity (cu. yd.)	Waste Disposed (cu. yd.)	Years Remaining (reported)
<u>COOK</u>			
American Grading Co.	596,957	141,360	4
Chicago Heights Refuse	0	0	0
Chicago Northwest Incinerator		1,322,893	
CID #2 (WMI)	11,179,746	1,728,648	6
Fitz-Mar Landfill	0	120, 569	0
Lake Landfill (WMI)	9,656,286	3,366,508	2
Land & Lakes #3	2,438,728	662,203	4
Land & Lakes #2	946,061	1,009,516	1
Land & Lakes (Dolton)	1,503,590	179,825	3
Paxton Landfill #2	0	891,159	0
Sexton (Lansing)	0	394,874	0
Sexton #2	6,918,975	2,981,025	3
Winnetka Municipal	436,208	43,896	10
<u>DUPAGE</u>			
Greene Valley (WMI)	36,566,505	2,612,508	14
Mallard Lake	29,668,692	4,248,854	7

TABLE 3-1 (Cont.)

Facility (reported)	Remaining Capacity (cu. yd.)	Waste Disposed (cu. yd.)	Years Remaining (reported)
<u>KANE</u>			
Settler's Hill (WMI)	21,338,258	1,900,151	11
Woodland Landfill (WMI)	12,376,325	820,442	15
<u>LAKE</u>			
Land & Lakes (Wheeling)	737,654	367,034	2
ARF Landfill Corp.	1,075,289	711,269	2
BFI #2	1,429,051	1,358,354	1
Lake Bluff Muni. #2	1,080	0	3
Lake County Grading Co.	663,107	136,894	5
Zion Municipal #2	0	2,654	0
<u>MCHENRY</u>			
McHenry Co. Sanitary Landfill	92,953	57,346	2
<u>WILL</u>			
Wheatland Prairie	10,432,199	375,403	28
CDT Landfill Corp.	606,680	953,252	1
Land & Lakes (Lemont)	592,160	521,444	1
Beecher Development	5,789,058	1,210,942	2
ESL, Inc.	890,500	120,483	7

Source: IEPA, Available Disposal Capacity  
for Solid Waste in Illinois, October, 1990

**FIGURE 3-1**  
**REGION 2 - 1990 ACTIVE NON-HAZARDOUS LANDFILLS**  
**SUBJECT TO STATE FEE**



SOURCE: IEPA, AVAILABLE DISPOSAL CAPACITY FOR SOLID WASTE IN ILLINOIS, OCTOBER, 1990

**TABLE 3-2**  
**SOLID WASTE DISPOSAL AND CAPACITY BY COUNTY**  
**1990**

COUNTY	TOTAL WASTE GENERATED (cu yds)	TOTAL WASTE DISPOSED (cu yds)	TOTAL REMAINING CAPACITY (cu yds)
COOK	22,145,615	12,842,476	33,676,551
DUPAGE	2,551,840	6,861,362	66,235,197
KANE	1,291,097	2,720,593	33,714,583
LAKE	2,509,850	2,576,205	3,905,101
MCHENRY	688,344	57,346	92,953
WILL	859,783	3,181,524	18,310,597
<b>TOTAL</b>	<b>30,046,529</b>	<b>28,239,506</b>	<b>155,934,982</b>

Source: IEPA, Available Disposal Capacity for Solid Waste in Illinois, October, 1990

The SB-172 process applies to Regional Pollution Control Facilities (RPCFs). State Statutes define a RPCF as any waste storage site, sanitary landfill, waste disposal site, waste transfer station, waste treatment facility or waste-to-energy facility that accepts waste from or that serves an area that exceeds or extends over the boundaries of any local general purpose unit of government. Excluded from the definition of Regional Pollution Control Facility are:

1. sites located within the boundary of a local general purpose unit of government and intended to serve only that entity;
2. waste storage sites regulated under 40 CFR, Part 761.42;

3. sites used by any person for waste storage, treatment, disposal, transfer, or incineration operation for wastes generated by such person's own activities, when such wastes are stored, treated, disposed of, transferred or incinerated within the site owned, controlled or operated by such person, or when such wastes are transported within or between sites owned, controlled or operated by such person;
4. sites at which the State is performing is performing removal or remedial action pursuant to Section 22.2 (of the Act); or
5. sites used by any person to specifically conduct a landscape waste composting operation; abandoned quarries used solely for the disposal of concrete, earth materials, gravel or road construction debris conducted by a unit of government or underground construction activities conducted by a public utility company; or regional facilities as defined in the Central Midwest Interstate Low-Level Radioactive Waste Compact.

A proposer of a RPCF must not only seek a permit from the IEPA but must also first file a site approval request with the local government (siting authority) in which the facility is to be located. The requirements of SB-172 set out specific and detailed procedural requirements which may be summarized as follows:

1. IEPA will not issue a permit for the new site until the permit applicant can show that the location of the facility has been approved by a county or municipal government;
2. The applicant must comply with certain notice requirements and must present a proposal which meets the site criteria of the law;
3. The public is afforded notice of the proposal and an opportunity to comment on it; and
4. The local officials are assigned the responsibility of examining the application and public comments and must make a determination as to whether the site meets the requirements of the law.

The provisions of SB-172 require the local siting authority to consider the application only within the context of criteria listed below. The SB-172 process as such supersedes local zoning requirements. Criteria to be considered include:

1. The facility is necessary to accommodate the waste needs of the area it is intended to serve;
2. The facility is so designed, located and proposed to be operated that the public health, safety and welfare will be protected;
3. The facility is located so as to minimize incompatibility with the character of the surrounding area and to minimize the effect on the value of the surrounding property;
4. The facility is located outside the boundary of the 100 year flood plain or the site is flood-proofed;
5. The plan of operations for the facility is designed to minimize the danger to the surrounding area from fire, spills, or other operational accidents;
6. The traffic patterns to or from the facility are so designed as to minimize the impact on existing traffic flows;
7. If the facility will be treating, storing or disposing of hazardous waste, an emergency response plan exists for the facility which includes notification, containment and evacuation procedures to be used in case of an accidental release; and
8. If the facility is to be located in a county where the county board has adopted a solid waste management plan, the facility is consistent with that plan; and
9. If the facility will be located within a regulated [groundwater] recharge area, any applicable requirements specified by the Board for such areas have been met.

In DuPage County, the local process for siting review is set out in Chapter 25 of the DuPage County Code. The status of development of such procedures at the municipal level is unknown.

The apparent effect of SB-172 is that it has substantially altered the siting of new waste disposal facilities. With increased local control over facility approval, developers are being held to an extremely high standard. Further, the process incorporates a lengthy and often expensive appeal process culminating in potential final decision-making by the Illinois Supreme Court. At the very least, SB-172 has substantially complicated the provision of new waste facilities and is playing a major role in the developing solid waste disposal crisis.

### 3.1.2 DuPage County

Solid waste generated within DuPage County is collected by private scavenger services through one of several arrangements including private collection, contract collection, or franchise collection.

Private collection represents the least involvement of local governments. Private haulers compete for customers on an individual basis. The customers pay the collection firm directly and rates are regulated by the open market. The municipal government may require that a license be obtained by the scavenger service. It may also establish by ordinance or resolution, a ceiling on rates for collection and minimum service requirements. This arrangement is practiced in 1 (2.7%) of the 37 DuPage communities.

Contract collection involves local government contracting with a private firm(s) to collect residential wastes. The firm(s) is paid directly by the local government according to the rate negotiated in the contract. Residents may pay for this service through a user fee to the municipality; taxes; or a combination of both of these methods. This arrangement is practiced in 13 (35.1%) of the 37 DuPage communities.

A franchise collection arrangement is very similar to a contract arrangement. In this system, a private firm(s) is contracted to collect wastes within the community. However, the firm(s) is responsible for billing the residents. This arrangement is practiced in 23 (62.2%) of 37 DuPage communities.

In June 1990, a waste collection survey (copy at end of this section) was conducted among the 37 communities within DuPage County. Table 3-3 (at the end of this section) summarizes the arrangements that are being used for residential refuse, recycling, and yard waste collection (revisions were made in January 1991). Additional comments for each community are provided in Table 3-4 (at the end of this section). Waste collection in the unincorporated areas of the county is generally unregulated. The exception is Downer's Grove Township where collection firms are licensed by the township. Collection services are either privately arranged or, in some cases, residents may haul their own refuse to a sanitary landfill. In most cases, private arrangements are also made for commercial and industrial waste collection.

Over 22 different scavenger firms collect residential wastes within DuPage County. A comprehensive list of residential, commercial, and/or industrial scavenger firms operating within DuPage County may be found in Table 3-5 (at the end of this section).

Waste Collection Survey  
June 1990

Name of Municipality: \_\_\_\_\_

Your Name and Title: \_\_\_\_\_

Please name the Individual(s) or Committee(s) responsible for  
Solid Waste Planning, Recycling, and/or Landscape Waste programs:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please provide population statistics of your municipality:

\_\_\_\_\_ numerical total of citizens within your municipality

\_\_\_\_\_ % single family homes

\_\_\_\_\_ % multi-family homes (define multi-family: \_\_\_\_\_)

The following questions request information concerning waste haulers and collection contracts. Since several municipalities contract with different haulers for different functions, collection information will be requested for each of the following areas: refuse, recycling, and landscape waste.

REFUSE

1. Please indicate your refuse collection approach:

\_\_\_\_\_ CONTRACT--municipality has contract with hauler(s) whereby municipality is billed for entire service area by hauler(s) and billing is done by the municipality

\_\_\_\_\_ FRANCHISE--municipality licenses or otherwise regulates hauler(s), but billing is done by the hauler(s).

\_\_\_\_\_ PRIVATE--applies only to those municipalities that do not regulate collection.

2. Name of refuse hauler(s): \_\_\_\_\_

Expiration date of the existing contract: \_\_\_\_\_

Contact person from the firm: \_\_\_\_\_

3. Please indicate the current monthly refuse collection rates (per residence) for each of the following: (If applicable, please note any price differentials for curbside or backdoor services.)

single family residential \_\_\_\_\_

multi-family/apartments (if available) \_\_\_\_\_

commercial/industrial (if available) \_\_\_\_\_

4. Were administrative and billing costs included in the quoted monthly refuse rates (if, for example, the billing is performed by the municipality)? \_\_\_\_yes \_\_\_\_no

If not, please explain. \_\_\_\_\_

5. Does the municipality subsidize refuse collection costs? \_\_\_\_yes \_\_\_\_no If yes, please explain. \_\_\_\_\_

6. Are senior citizen (or other) discounts available? \_\_\_\_\_

7. Are bulk items allowed? \_\_\_\_yes \_\_\_\_no

If so, please indicate the collection rates and limitations.

8. Are there any particular collection restrictions (i.e., bags only--no cans)?

9. What is the frequency of refuse collection? \_\_\_\_\_

10. Is reporting of the amount of refuse collected required by the contract? \_\_\_\_yes \_\_\_\_no

If so, what was the amount of waste collection for the last full year? Please indicate the span of time this figure covers.

RECYCLING

11. Does your municipality have a drop-off recycling center?

\_\_\_\_yes \_\_\_\_no (If yes, please answer questions 12-14)

12. Who supervises the facility? \_\_\_\_\_

13. What materials does the drop-off facility accept?

newspaper  aluminum  glass  HDPE plastic  
 motor oil \_\_\_\_\_ others

14. Is the drop-off facility compensated for its services in any way other than revenues generated from the sale of materials (such as a diversion credit or subsidy from the community)?  
 yes  no If yes, please explain.

\_\_\_\_\_  
\_\_\_\_\_

15. Does your municipality have a curbside recycling program?

yes  no (if yes, please answer questions 16-22)

16. Name of curbside recycling hauler(s): \_\_\_\_\_

Expiration date of the current contract: \_\_\_\_\_

17. Please indicate the current monthly curbside recycling collection charge per residence:

\_\_\_\_\_

18. How are residents billed? \_\_\_\_\_

\_\_\_\_\_

19. What materials are included in the curbside pick up?

newspaper  aluminum  glass  HDPE plastic  
\_\_\_\_\_ others

20. Who provides the curbside collection containers? (No response indicates no containers.)

resident  municipality  county \_\_\_\_\_ other

21. What type of containers are supplied to residents?

shape: \_\_\_\_\_ capacity: \_\_\_\_\_

22. What is the frequency of curbside collection? \_\_\_\_\_

Are recyclables and refuse collected on the same day? \_\_\_\_\_

23. What is the total weight of material recycled throughout your municipality in the last full year? Please indicate the span of time this figure covers. \_\_\_\_\_

24. Briefly describe your municipality's educational activities concerning recycling. Please enclose any materials regarding recycling that you are currently circulating.

---

---

---

25. Please identify any organizations that are significantly involved with the recycling effort in your municipality.

<u>Organization</u>	<u>Contact Person</u>	<u>Phone Number</u>
---------------------	-----------------------	---------------------

---

---

LANDSCAPE WASTE

26. Name of landscape waste hauler(s): \_\_\_\_\_

Expiration date of the existing contract: \_\_\_\_\_

27. Please indicate the method in which residents are charged and the costs for the collection of their landscape waste.

---

---

---

28. Please indicate the types of landscape waste which are acceptable for collection (i.e., leaves and brush only). Also, please describe any qualifications or restrictions concerning the collection of landscape waste (i.e., size requirements).

---

---

---

29. What type of containers can be used? Are there any bundling requirements? Also, if specially designed stickers/tags or bags are used, where are they available?

---

---

30. What will be the collection season for landscape waste (for example: April-November)?

---

31. Briefly describe your municipality's educational activities concerning landscape waste. Please enclose any current landscape waste literature which you are circulating.

---

---

---

32. Please indicate, if available, the total weight of landscape waste collected in the last full year? Please include the span of time this figure covers.

---

PLEASE RETURN THIS FORM BY JUNE 20, 1990.

TABLE 3-3

**DUPAGE MUNICIPAL RESIDENTIAL WASTE COLLECTION OVERVIEW  
JUNE 1990 (REVISED JANUARY 1991)**

Community	Collection Approach	Licensee/Contractor	Refuse Mo. Cost	Recycling Mo. Cost	Yard Waste Cost
Addison (A,B,SD,HD)	C	BFI	9.50	NA	1.90/month or 22.80/year
Aurora (A,B,TB)	C	BFI	7.51	NA	1.00/bag or tag
Bartlett (A,B)	F	Able Disposal	10.75	1.45	1.20/bag or tag
		Arc Disposal	10.05	1.45	
		BFI	11.00	1.45	
		Elgin-Wayne	11.00	1.45	
		Monarch Disposal	9.55	1.45	
Batavia (A,B,TB)	C	TCS Services	7.00	NA	0.00
Bensenville (A,B)	C	BFI	8.09	NA	3.41/month
Bloomington (A,B)	F	BFI	10.59	1.38	1.00/bag or tag
Bolingbrook (A,B)	C	A&A Crown Disposal	6.00	2.00	1.05/bag or tag
Burr Ridge (A,B)	P	A&W Disposal	9.25	0.00	1.00/bag or tag
		Crown/Burr Ridge	9.55	1.75	
		Clearing Disposal	10.00	1.75	
Carol Stream (A,B)	F	Elgin Wayne Disposal	8.02	NA	1.32/bag or tag
Clarendon Hills (A,B,SD)	F	Rot's Disposal	10.50 (CS) 16.65 (BD)	included in refuse cost	1.30/bag or tag
Darien (B)	F	Rot's Disposal	1.30/bag	0.00	1.30/bag or tag
Downers Grove (B)	F	Rot's Disposal	1.25/bag	0.00	1.25/bag or tag
Elk Grove (A,B)	F	Garden City	10.10	1.60	.50/bag or tag, no charge for leaves and large bundled brush
Elmhurst (A,B,TB)	C	BFI-Vander Molen	8.68	NA	1.25/bag or tag
Glen Ellyn (A,B,SD)	C	Laidlaw Disposal	9.10 (CS) 13.95 (BD)	NA	.50/bag or tag
Glendale Heights (A,B,SD)	F	BFI	9.10	2.40	1.00/bag or tag
Hanover Park (A,B,SD)	F	Laidlaw Disposal	9.74	1.76	1.00/bag or tag
Hinsdale (A,B,SD,TB)	C	Rot's Disposal	18.35	2.10	included in refuse cost
Itasca (A,B,TB)	C	BFI	8.25	1.00	1.10/bag or tag, free bi-monthly brush pick-up and chipping service
Lisle (B)	F	Rot's Disposal	1.30/bag	0.00	1.30/bag or tag

TABLE 3-3 CONT.

DUPAGE MUNICIPAL RESIDENTIAL WASTE COLLECTION OVERVIEW  
 JUNE 1990 (REVISED JANUARY 1991)

Community	Collection Approach	Licensee/Contractor	Refuse Mo. Cost	Recycling Mo. Cost	Landscape Cost
Lombard (A,B,SD)	F	Lombard Disposal Suburban Disposal	7.90	1.85	1.50/bag or tag
Naperville (A,B)	F	Fox Valley Disposal N.A.R.C.	10.79	3.50	included in refuse cost
Oak Brook (A,B,TB)	F	Clearing Disposal, Oak Brook Disposal, Rot's Disposal	9.00 (CS,1x) 10.90 (CS,2x) 12.90 (BD,1x) 17.90 (BD,2x)	2.25	1.28/bag or tag, 12.33/cu.yd. unbundled waste, 117.32 total rental
Oak Brook Terrace (A,B)	F	Clearing Disposal	7.80	1.55	1.28/bag or tag
Roselle (A,B,SD)	F	BFI	7.70 (HOA) 8.60 (SF)	2.35	1.00/bag or tag
Schaumburg (A,B)	F,P	Laidlaw Disposal	10.39	included in refuse cost	included in refuse cost
St. Charles (A,B,TB)	F	Fox Valley Disposal	1.01/bag	0.00	1.01/bag or tag
Villa Park (A,B,TB)	C	Villa Park Disposal	8.92	NA	1.45/bag or tag
Warrenville (A,B)	C	Fox Valley Disposal	7.90	0.00-PP	1.10/bag or tag
Wayne (A,B)	F	Able Disposal Acorn Disposal Monarch Disposal	11.00 11.50 11.25	1.50	1.30/bag or tag 1.00/bag or tag, or 5.00/month 1.50/bag or tag
West Chicago (A,B,SD)	F	Laidlaw Disposal	7.55	2.04	1.40/bag or tag
Westmont (A,B,SD,TB)	C	Westmont Disposal	3.40	0.00	1.40/bag or tag
Wheaton (B)	F	Fox Valley Disposal	.94/bag	0.00	.97/bag or tag
Willowbrook (A,B)	F	A&W Disposal Clearing Disposal Crown Disposal Rot's Disposal	9.00 (CS,1x) 14.00 (CS,2x) 14.00 (BD,1x)	1.70	1.35/bag or tag
Winfield (A,B)	F	Winfield Disposal	1.00/bag	0.00	1.00/bag or tag
Wood Dale (A,B,SD)	C	BFI	13.67	NA	included in refuse cost
Woodridge (A,B)	F	Rot's Disposal	7.72	1.80	1.30/bag or tag

Table Notes

1. **COMMUNITY** - Thirty seven municipalities within DuPage County participated in this survey; townships were not included.

A: administrative and billing costs are included in the refuse, recycling, and land waste collection fees

B: bulk item pick-ups are provided by the hauler to residents

HD: a discount is available to handicapped citizens

SD: a discount is available to senior citizens

TB: refuse, recycling, or yard waste collection fees are tax-based in some form

2. **COLLECTION APPROACH**

C: Contract - municipality has contract with hauler(s) whereby municipality is billed for the entire service area by hauler(s) and billing is done by the municipality

F: Franchise - municipality licenses or otherwise regulates hauler(s), but billing is done by the hauler(s)

P: Private - applies only to those municipalities that do not regulate collection

3. **REFUSE MONTHLY COST** - Residents are primarily charged on a monthly basis; however, some residents are charged per bag. Assume collection is single-family curbside once per week unless otherwise indicated.

CS: curbside

BD: backdoor

SF: single family

MF: multi-family

HOA: Home Owners Association

1x: once per week

2x: twice per week

4. **RECYCLING MONTHLY COST**

NA: a curbside recycling program does not currently exist

0.00: a curbside recycling program does exist without a fee to residents

5. **YARD WASTE COST** - Residents are charged either monthly or on a per bag system.

Bag or Tag: Residents purchase special compostable bags and/or tags to contain and identify yard waste for collection services.

## TABLE 3-4

### COMMUNITY COMMENTS FOR COLLECTION (JUNE 1990)

#### 1. Addison

- a 50 percent handicap and senior citizen discount on refuse collection fees is available
- community adds 10 percent to refuse fee for billing and administration
- the yard waste collection season is from March to November

#### 2. Aurora

- the entire refuse cost is subsidized through the general fund

#### 3. Bartlett

- curbside recycling fee is included in the monthly refuse bill

#### 4. Batavia

- the village may subsidize refuse fees when excess costs occur

#### 5. Bensenville

- the yard waste collection season is from April to November

#### 6. Bloomingdale

- the curbside recycling fee is included in the monthly refuse bill

#### 7. Bolingbrook

- the village subsidizes the curbside recycling service cost

#### 8. Burr Ridge

- Village does not regulate collection in any manner
- the curbside recycling fee is included in the monthly refuse bill

#### 9. Carol Stream

- the yard waste collection season is from April to November

#### 10. Clarendon Hills

- the monthly refuse charge is 10.50 month for 2 bags per week, each additional bag is 1.30.
- a .50/month senior citizen discount on refuse collection fees is available
- the curbside recycling fee is included in the monthly refuse bill

#### 11. Darien

- collection of refuse and yard waste is charged on a per bag system
- curbside recycling is operating without a fee to residents

#### 12. Downers Grove

- collection of refuse and yard waste is charged on a per bag system
- curbside recycling is operating without a fee to residents

#### 13. Elk Grove

- the curbside recycling fee is included in the monthly refuse bill

#### 14. Elmhurst

- the village subsidizes 2.17 of the 8.68 refuse cost

#### 15. Glen Ellyn

- community adds 8 percent to refuse fee for billing and administration
- a 10 percent senior citizen discount on refuse collection fees is available

TABLE 3-4 CONT.

16. Glendale Heights

- a .50/month senior citizen discount on refuse collection fees is available

17. Hanover Park

- a 50 percent senior citizen discount on refuse collection fees is available

18. Hinsdale

- the village subsidizes 2.35 of the 18.35 refuse cost
- the curbside recycling fee is on the water bill
- a 50 percent senior citizen discount on refuse collection fees is available

19. Itasca

- the village subsidizes 3.25 of the 8.25 refuse cost
- the village subsidizes bi-monthly chipping services

20. Lisle

- collection of refuse and yard waste is charged on a per bag system
- curbside recycling is operating without a fee to residents

21. Lombard

- a 10 percent senior citizen discount on refuse collection fees is available

22. Naperville

- residents are not charged collection fees directly, the refuse and the curbside recycling collection costs are drawn from the general revenue fund.

23. Oak Brook

- the village subsidizes 9.00/month per residence for refuse collection; the resident pays for upgraded service levels
- the curbside recycling fee is on the water bill

24. Oak Brook Terrace

- the curbside recycling fee is included in the refuse collection bill

25. Roselle

- a .85/month senior citizen discount for refuse collection fees is available
- the curbside recycling fee is included in the refuse collection bill

26. Schaumburg

- the yard waste collection season is from April to November

27. St. Charles

- refuse and yard waste collection costs are charged on a per bag system
- curbside recycling is operating without a fee to residents
- bi-monthly brush pick up and fall leave pick up is subsidized through the general fund

28. Villa Park

- the village subsidizes 3.92 of the 8.92 refuse cost

29. Warrenville

- curbside recycling is operating without a fee to residents

30. Wayne

- the curbside recycling fee is included in the refuse collection bill

## TABLE 3-4 CONT.

### 31. West Chicago

- a 1.71 senior citizen discount on the quarterly refuse collection fee is available
- the curbside recycling fee is included in the refuse collection bill

### 32. Westmont

- Residents are billed 10.20 per quarter for refuse collection; the village subsidizes remaining costs

### 33. Wheaton

- refuse and yard waste collection costs are charged on a per bag system
- curbside recycling is operating without a fee to residents

### 34. Willowbrook

- the curbside recycling fee is included in the refuse collection bill

### 35. Winfield

- refuse and yard waste collection costs are charged on a per bag system
- curbside recycling is operating without a fee to residents

### 36. Wood Dale

- a 1.00 senior citizen discount on the bi-monthly refuse collection fee is available
- the yard waste collection fee is included on residents' monthly utility bill
- the yard waste collection season is from July to November and March to April

### 37. Woodridge

- the curbside recycling fee is included quarterly in the refuse collection bill

TABLE 3-5

DUPAGE AREA HAULERS

ARC Disposal Co. Inc.  
2101 S. Busse  
Mt. Prospect, IL 60056

A & W Disposal  
325 Washington Avenue  
LaGrange, IL 60525  
354-2444

Able/West Chicago Disposal  
P.O. Box 240  
West Chicago, IL 60185  
231-9191

Advance Disposal Service  
790 Euclid  
Elmhurst, IL 60126  
834-8392

Anchor Scavenger Service  
16 W 719 Hillside Lane  
Hinsdale, IL 60521  
323-0307

Ar-Way Disposal  
P.O. Box 611  
Winfield, IL 60190  
682-0401

BFI - Glen Ellyn  
1 N. 282 Park  
Glen Ellyn, IL 60137  
469-1036

BFI - Schaumburg  
1827 Walden Office Square  
Suite 107  
Schaumburg, IL 60173  
397-7760

BFI - Van Der Molen.  
P.O. Box 1537  
Aurora, IL 60507-1537  
892-9294

BFI - Van Der Molen  
5050 Lake  
Melrose Park, IL 60160  
345-7070

B & S Hauling  
1108 N. Oakley Drive  
Westmont, IL 60632  
325-5296

Beirne's Hauling  
413 Westmore Avenue  
Villa Park, IL 60181  
279-5187

Burke's Hauling and Refuse Company  
516 N. Main  
Glen Ellyn, IL 60137  
469-5800

Charles Lenz & Co.  
1615 S. 55th Avenue  
Cicero, IL 60650  
242-2022

Clearing Disposal - WMI  
3800 S. Laramie Avenue  
Cicero, IL 60650  
656-5350

Crown/Burr Ridge Disposal  
8475 53rd  
McCook, IL 60525  
485-9000

Dave's Hauling Service  
1005 F. W. North Avenue  
Villa Park, IL 60181  
629-1440

DuPage Disposal  
P.O. Box 3  
Villa Park, IL 60181  
834-5054

Elgin Wayne - WMI  
7 N. 904 S. RT. 25  
Elgin, IL 60120  
742-8492

Elmhurst Disposal  
P.O. Box 275  
Elmhurst, IL 60126  
834-6732

Federal Disposal Service Inc.  
Villa Park, IL  
629-0020

Flood Brothers Disposal Systems  
4827 W. Harrison  
Chicago, IL 60644  
626-5800

Fox Valley - WMI  
780 N. Kirk Road  
Batavia, IL 60510  
879-9190

Garden City Disposal - WMI  
11990 Franklin Avenue  
Franklin Park, IL 60131  
595-4800

Groot Automatic Disposal Co. Inc.  
1759 N. Elmhurst Road  
Elk Grove Village, IL 60007

Jim Hackett  
24 S. Oak Street  
Hinsdale, IL 60521

Hillside Disposal Service Inc.  
4152 May  
Hillside, IL 60162  
544-2020

TABLE 3-5 CONT.

DUPAGE AREA HAULERS

Kleen Way Disposal  
Box 385  
Hinsdale, IL 60521  
323-7924

Laidlaw Waste Systems  
3651 Blackhawk Drive  
Rolling Meadows, IL 60008  
439-6686

Lombard Disposal  
1416 S. Meyers Road  
Lombard, IL 60148  
627-1108

Miedema Disposal Service  
3 N. 506 N. Lombard Road  
Addison, IL 60101  
543-7745

Monarch Disposal/Amer-Way  
7 N. 512 Dunham Road  
Elgin, IL 60121  
377-5870

Molenhouse Disposal  
24 W. 178 St. Charles Road  
Wheaton, IL 60187  
653-4166

Oak Brook Disposal  
P.O. Box 1015  
Oak Brook, IL 60521  
654-4166

Rex Disposal Inc.  
1140 N. Ellis  
Bensenville, IL 60106

Rot's Disposal - BFI  
266 63rd  
Downers Grove, IL 60515  
964-3232

Roy Strom Inc.  
1201 Greenwood  
Maywood, IL 60153  
344-5000

Sani-Way Disposal Service  
232 W. Butterfield Road  
Elmhurst, IL 60126  
279-0242

Service Company  
47 W. Irving Park  
Roselle, IL 60172  
351-3838

Speedway Disposal Company  
Box 461  
Geneva, IL 60134  
232-4377

Suburban Disposal  
P.O. Box 635  
Lombard, IL 60148  
629-0829

Pete Tameling Inc.  
8 S. 365 South Madison  
Hinsdale, IL 60521  
325-1805

Terrace Disposal Service  
105 May  
Elmhurst, IL 60126  
279-1527

Tri-County Scavenger  
1805 Ashley Road  
Morris, IL 60560  
892-9092

VanRyn Scavenger Service Inc.  
4319 Butterfield Road  
Bellwood, IL 60104  
544-1217

Villa Park Refuse Disposal  
612 Western Avenue  
Lombard, IL 60148  
627-4985

Waste Management - Midwest Region  
P.O. Box 7070  
Westchester, IL 60154  
409-0700

Westowns Disposal  
30 W. 218 Butterfield  
Warrenville, IL 60555  
668-7093

Winfield Disposal  
3 S. 104 Winfield Road  
Winfield, IL 60190  
665-8288

Zimmerman Trucking Inc.  
3 N. 361 Powis Road  
West Chicago, IL  
584-4565

## 3.2 DISPOSAL SITES

### 3.2.1 Landfills

The principal method of solid waste disposal in the county is sanitary landfilling. The IEPA permitted landfills within DuPage County which provide for municipal solid waste disposal are located at Mallard Lake and Greene Valley Forest Preserves. Both of these landfills are owned by the Forest Preserve District of DuPage County and operated by private firms. The purpose set forth for landfilling activities on Forest Preserve District land is the development of recreational facilities. The above-ground fills are proposed to provide topographic relief hills for recreational purposes.

Mallard Lake is operated by E & E Hauling, which is a subsidiary of Browning-Ferris Industries. The facility is located at the 927-acre Mallard Lake Forest Preserve in the northwestern section of the county, west of Gary Avenue on Schick Road. The service area for this facility includes approximately half of DuPage County and a portion of northwestern Cook County. The IEPA's Available Disposal Capacity for Solid Waste in Illinois (October 1990) reports that 4,248,854 cubic yards of waste were disposed in the year ending April 1, 1990. Remaining capacity of the facility was estimated to be 29,668,692 cubic yards. The estimated life remaining at the site as reported by the operator is 7 years. This estimate by the operator assumes that waste delivery conditions will not change in the future. The estimate does not assume that as surrounding sites close, Mallard Lake may receive increasing quantities of waste until 1992 when a revised operating agreement with the Forest Preserve District will allow limiting the receipt of waste.

Greene Valley is operated by Waste Management of Illinois. This facility is located in the south central section of the county

in the Greene Valley Forest Preserve. The preserve is west of Illinois Route 53 and borders both sides of 75th Street (east of Naperville and west of Woodridge). The landfill is located south of 75th Street. The service area for this facility includes the southern half of DuPage County and some western Cook County communities. The IEPA's Available Disposal Capacity for Solid Waste in Illinois (October 1990) reports that 2,612,508 cubic yards of waste were disposed during the reporting period. Remaining capacity of the facility was estimated to be 36,566,505 cubic yards. The estimated life remaining at the site as reported by the operator is 14 years. The same considerations expressed above for Mallard Lake apply to this estimate for Greene Valley.

Two other facilities located in the county provide for restricted waste disposal needs.

1. Argonne National Laboratory has a sanitary landfill on-site which serves the site exclusively. Waste material disposed at the site includes general office refuse, cafeteria waste, construction rubble, and pollution control waste. Annual disposal volume equals approximately 35,000 cubic yards.
2. Elmhurst-Chicago Stone is a surface quarry no longer in use, although sub-surface mining continues to operate. The site is under development and will accept only construction and demolition rubble with no metal or putrescible material. The annual disposal volume is estimated at 240,000 cubic yards.

Several landfills located outside of the county receive wastes generated in DuPage County.

1. The Hillside Landfill is located in an abandoned quarry at Manheim Road and Eisenhower Expressway in Hillside. It is owned by Congress Development Corporation, a joint venture by John Sexton Land and Gravel Company and Browning Ferris Industries and is operated by Sexton. The site primarily serves western Cook County and the eastern portion of DuPage County. Expected completion of the landfill is 1993.
2. The Land and Lakes, Company operates the site situated

west of Lemont and northeast of Romeoville in Will County. The site primarily serves southwestern Cook County and northern Will County. The estimated remaining life of this facility has been reported to be one year.

3. The Settler's Hills landfill is the recently opened expansion of the now closed Geneva/Midway landfill on Fabyan Parkway at the southwest edge of Geneva. The site is owned by Kane County and is partially within municipal boundaries of Geneva and partially in an unincorporated area. The landfill has been developed and is operated by Midway Disposal, Inc. which is a subsidiary of Waste Management. Its service area primarily is within the Fox Valley and includes the central-western section of DuPage County and the central-eastern section of Kane County. The estimated remaining life of this facility has been reported to be 11 years.

### 3.2.2 Combustion

In preparation of the DuPage County Solid Waste Waste-To-Energy Study (1987) the County reviewed the IEPA Boiler Report produced by the Division of Air Pollution Control which listed the incineration facilities with permits within the county. The incineration facilities included 17 commercial sites, 17 schools, 7 hospitals, and 3 animal hospitals. The "Inventory of Waste-To-Energy Facilities in Illinois", prepared by the Illinois Department of Energy and Natural Resources, indicates that two of these facilities have utilized their incinerator for energy recovery. They are Hinsdale Hospital and Good Samaritan Hospital. Both reportedly use generated steam for hospital use. Installed capacity is 43.2 tons per day with average processed tonnage equalling 6.4 tons per day. The categorized volumes of waste incinerated for volume reduction may be summarized as follows.

- Schools	355 tons/year
- Commercial/Industrial	1,536+ tons/year
- Hospitals	1,796+ tons/year
- Animal Hospitals/Crematoria	275+ tons/year
	-----
<b>Total</b>	<b>3,962+ tons/year</b> or approximately 11 tons/day

### 3.3 IMPORT AND EXPORT OF WASTE

It is widely recognized that DuPage County is a net importer of waste for disposal. In Available Disposal Capacity For Solid Waste In Illinois (October 1990), the Illinois Environmental Protection Agency (IEPA) evaluated the import and export of waste in the Chicago Metropolitan Region which includes Cook; DuPage; Grundy; Kane; Kankakee; Kendall; Lake; McHenry; and Will counties. According to IEPA, waste importing counties include Grundy (89.3%); Will (73.3%); DuPage (62.9%); Kane (55.1%); and Lake (6.6%). Waste exporting counties include Kendall (100.0%); McHenry (88.9%); Cook (41.0%); and Kankakee (19.3%). The sources for the generation of the imported waste were not provided.

It is important to note that those counties which are net importers of waste did not necessarily set out to be importers. Solid waste, for the most part, moves throughout the region with the decision for disposal location to be determined by the hauler. Some controls do exist in the region (i.e. Chicago waste directed to the City's waste-to-energy facility and limits placed on daily volumes at some landfills) but in the most simplistic viewpoint, without control mechanisms solid waste moves to the point of disposal which represents the least cost to the hauler. Many factors enter into the cost equation which a hauler must consider in this decision but transport costs and tipping fees at the disposal facility probably lead in their importance. The point is, absent the imposition of some controlling factors, local governments cannot limit the movement of waste into their locality.

In the case of DuPage County, the two landfills have been developed according to a construction approach which encourages their operation as regional facilities. The two operator's have been contractually obligated to construct recreational facilities providing topographic relief at the two sites by the method of sanitary landfilling and to do so within a contracted period of

time. The contacts have also precluded the imposition of tipping fees at the landfills which are higher than fees at other area sites. Both operators also operate major hauling operations in the region and have a desire to dispose of their collected waste. None of these observations reflect any negative comment on previous conditions but they, along with the availability of large amounts of generated waste produced on a regional basis, encouraged the use of the facilities by generators of waste located outside of DuPage County and this is indeed what has happened.

In 1989 the Forest Preserve District's Office of Government Services conducted a survey of the incoming waste at the two landfills. In its "Survey Of Origin Of Waste" the Government Services Department concluded that at the Greene Valley site 62.06% of the disposed waste originates outside of the county. According to the same report, at the Mallard Lake site 65.16% of the disposed waste originates outside of the county. These values differ slightly from the IEPA values cited above.

On November 28, 1990 the Forest Preserve District approved amendments to the operation contracts for Mallard LAke and Greene Valley which could have a substantial impact on the amount of waste recieved at the two sites. Begininning July, 1992 the Forest Preserve may limit the amount of waste recieved at the two sites and by that action give preference (to the point of exclusivity) to waste generated within DuPage County. The overall effects of these contract amendments on waste disposal capacity are discussed further in Section 5.0 of this Appendix.

Of the surrounding area landfills that may receive exported DuPage Waste, information is only available for the facilities located in Kane County. Table 3-6 summarizes information available from Kane County which was collected from surveys of the incoming waste at the two landfills located there. Table 3-7 presents a summary of the same information in terms of percent.

**TABLE 3-6**  
**AVERAGE DAILY GATE VOLUMES BY COUNTY**  
**(Cubic Yards)**

<u>County</u>	<u>Settlers Hill</u>		<u>Woodland</u>		<u>Total</u>	
	<u>1989</u>	<u>1990</u>	<u>1989</u>	<u>1990</u>	<u>1989</u>	<u>1990</u>
KANE	3507	2992	1426	1230	4933	4222
DUPAGE	2363	1840	303	212	2666	2052
OTHER	<u>447</u>	<u>387</u>	<u>885</u>	<u>1532</u>	<u>1332</u>	<u>1919</u>
	6317	5219	2614	2974	8931	8193

**TABLE 3-7**  
**PERCENT OF DAILY GATE VOLUMES BY COUNTY**

<u>County</u>	<u>Settlers Hill</u>		<u>Woodland</u>		<u>Total</u>	
	<u>1989</u>	<u>1990</u>	<u>1989</u>	<u>1990</u>	<u>1989</u>	<u>1990</u>
KANE	55.5	57.3	54.6	41.4	55.2	51.5
DUPAGE	47.4	35.3	11.6	7.1	29.9	25.0
OTHER	7.1	7.4	33.8	51.5	14.9	23.5

Source For Tables 3-6 & 3-7: Memorandum To County Development Committee from Gary Mielke, Solid Waste Planner, September 18, 1990.

Plan-1990 assumes that any new facilities will be sized only for the acceptance of waste generated by DuPage communities with one exception. Several communities in the county actually have portions of their territories located outside of the county's boundaries and have been termed as "border communities" in the solid waste planning effort.

During the course of discussions of the effects on solid waste planning by either inclusion or exclusion of these communities, it was determined by the Solid Waste Planning Committee that the relative impact on the total wastestream would be minimal and that the fragmentation of municipal service should be avoided if possible. The Solid Waste Planning Committee recommended that communities which either currently have or will more than 33 percent of their population within DuPage County should be provided the opportunity to participate in the DuPage solid waste management system. These communities include Aurora; Bartlett; Bensenville; Burr Ridge; Hanover Park; Hinsdale; Naperville; Roselle; and Wayne. The Solid Waste Planning Committee determined that the County

should accept waste from areas outside of DuPage County under the jurisdiction of DuPage municipalities (border communities) as long as those communities have committed to be included in the County's solid waste effort. This opinion was endorsed by the County Board in its approval of Resolution SW-002-90.

### 3.4 RECYCLING AND COMPOSTING IN DUPAGE COUNTY

This Section provides a basic summary of waste reduction, recycling and waste diversion activities in the county. More detailed information is provided in Appendix A-2 and the reader is encouraged to refer to that appendix.

#### 3.4.1 Residential Recycling

Since 1970 and more so since 1985, recycling opportunities of great variety have been established in DuPage. Most opportunities have expanded as time, money and markets have allowed. Recycling programs that are geared towards residentially generated solid waste can be defined as curbside recycling programs, dropoff programs, and buyback centers and are described in the following sections.

##### 3.4.1.1 Curbside Recycling Programs

These programs are characterized by regular (usually weekly) collections, and designed to parallel service for curbside collection of refuse. Recyclable materials are collected using separate vehicles from refuse collection and usually a standardized container for the resident. Most of these programs are contracted by municipalities to private haulers as part of municipal services offered to residents. As of January 1991 twenty-eight of the county's thirty-seven municipalities and two of the county's nine townships have arranged for some sort of curbside recycling program for single family homes. Most programs begin by collecting

newspapers, glass and aluminum. The expansion of materials collected is generally in response to the development of markets, processing capabilities and willingness of the public.

After collection at the curb, the materials are transported to a processing operation where they are sorted, processed and readied for market. Current programs are limited due to the lack of processing capability in northeastern Illinois, as well as overburdened markets for recyclable materials. "Processing" for the most part is currently being done at the side of the truck during collection by separation of the materials by the truck driver. Materials from collection vehicles are then transferred to larger trucks at the hauler's truck yard for transport to market.

#### 3.4.1.2 Drop off Programs

Dropoff programs require residents to transport their recyclable materials to central locations for collection, sorting and shipment to market. There are three types of drop off programs currently in use in the county.

1. Multi-Material Recycling Centers (MRC) - These are defined as permanent centers with regular hours that accept a minimum of three materials. MRCs are regional facilities with an approximate 3 mile radius service area. Most of these facilities were implemented by volunteer groups although a few are now being operated by municipalities. Of the twenty-four drop-off facilities in the county, fifteen are considered to be Multi-Material Recycling Centers. With the advent of curbside recycling programs, the significance of MRCs has not declined. In fact, they have increased in the number of materials handled as well as expanded into multi-family and small business services.
2. Specialized Drop off Centers - Seven of the county's twenty-six drop off centers accept one or two materials for recycling purposes and do not offer the full range of services found at an MRC. Most of these dedicated locations are geared toward specialized materials such as aluminum, newspaper, polystyrene foam or motor oil.

3. Satellite Drop off Centers - Multi-family dwellings cannot be served by standard curbside recycling programs but need to have convenient recycling opportunities available in order to maximize participation and wastestream diversion. Satellite drop off centers consist of a few small bins or igloo shaped containers that are placed in the parking lots or basements of apartment and condominium complexes or other convenient locations for residents not served by curbside programs. Currently, several satellite facilities have been developed for multi-family dwellings in Lisle, Naperville, and Woodridge.

A combination of these dropoff programs make recycling opportunities available to all DuPage residents and fill gaps in the system that exist either due to the unavailability of curbside recycling programs or to address materials that are not accepted through the curbside programs.

#### 3.4.1.3 Buy Back Centers

There are thirteen locations in Dupage County that buy materials from the public for recycling purposes. Over fifteen different materials are handled through these centers, ranging from glass containers to laser printer toner cartridges. Some permanent locations buy a wide variety of materials from the public, such as St. Charles Scrap. Others, such as the many Reynolds Aluminum trailers, buy only one or two materials from the public.

Buy back centers help attract people into recycling who otherwise might not be interested in keeping recyclable materials from the trash. In addition to providing cash to the public, the buy back centers also provide local markets for certain materials collected from some drop off programs.

#### 3.4.2 Commercial, Industrial and Institutional Recycling

The commercial wastestream of DuPage County has long been the source of raw materials for the production of new goods, both

locally and at more distant markets. Businesses have implemented recycling programs as economical methods to dispose of waste and surplus materials and to recapture some of the cost of initial purchase of materials.

Scrap metal and paper dealers have long provided collection service for generators of large quantities of sellable materials. Over the last several years, recycling opportunities for smaller quantity generators have developed, particularly for high grade office papers. A number of new companies are now offering comprehensive recycling collection, marketing and promotional programs for offices, factories and institutions throughout the area.

The recent push towards commercial, industrial and institutional recycling programs has been driven in part by the rise of residential curbside programs. Employees who have learned to recycle at home are now expecting the same sort of source separation programs in the work place. Where recycling programs were rare in offices in the past, comprehensive programs for the collection of paper and other materials as well as a drive to purchase recycled goods are now becoming commonplace in DuPage County.

The County's Solid Waste Division has been instrumental in providing information about vendors, marketing and design of collection programs to businesses interested in beginning or expanding existing recycling programs. Although this informal information program has been highly successful, although an expanded promotional campaign for recycling in this portion of the wastestream could further the reduction of solid waste in DuPage County.

### 3.4.3 Composting and Landscape Waste

Even before the ban of landscape waste from Illinois landfills became effective on July 1, 1990, there were two operational large scale composting projects in the DuPage County area. The City of Naperville and Land and Lakes Company at their landfill near Romeoville, were both operating composting projects more than one year before the state mandated deadline.

Shortly before the deadline, three additional facilities opened to serve the DuPage County area. Waste Management Inc. opened a land application site at the Settler's Hill Landfill near Geneva and BFI began land application/composting at a farm near Oswego in Kendall County. DuPage County opened a composting facility in the county on June 1, 1990 on 120 acres of DuPage Airport land in the western edge of the county.

Landscape waste is generally collected weekly from residents by municipal crews or contracted haulers and transported to a composting or land applications facility. Most municipalities and haulers charge residents for each bag collected, thus giving the resident a financial incentive to deal with landscape waste disposal at the point of generation by using backyard compost, "lawn recycling" and on-site chipping of brush. Rates for collection vary greatly due to varying contracts and municipal subsidies. All thirty-seven municipalities have implemented some type of collection program since just before the state ban on July 1, 1990.

DuPage County and DuPage municipalities have encouraged the public to deal with landscape waste at the point of generation in order to avoid the cost and effort of central collection programs. Literature from the County, as well as the State of Illinois and municipalities has been widely distributed to residents and businesses to encourage backyard composting and "lawn recycling".

The "Y. Baggit" campaign by the County has been especially successful with over 480,000 copies of the "Recycle Your Lawn With Y. Baggit" and over 220,000 copies of "Backyard Composting With Y. Baggit" distributed to DuPage residents since July 1989.

3.4.4 Overview And Summary

Appendix A-2 provides data on the level of recycling and waste diversion in the county at the present time. In Table 3-7, the effects of composting, curbside recycling and multi-material recycling centers in DuPage County on the residential and total wastestream are summarized.

**TABLE 3-8  
PERCENT OF WASTE DIVERSION IN 1990**

<u>DIVERSION METHOD</u>	<u>% OF RESIDENTIAL WASTESTREAM</u>	<u>% OF TOTAL WASTESTREAM</u>
- Composting	29.0	13.0
- Curbside Recycling	7.0	3.1
- MRC Drop Off Recycling	<u>1.1</u>	<u>.7</u>
Total	37.1	16.8

By far, the largest waste diversion impact has been provided by the advent of the ban on landfilling of landscape waste which went into effect on July 1, 1990. Unfortunately, at this time, a County reporting mechanism does not exist to evaluate the wastestream and diversion impacts of the commercial/industrial/institutional, public, and construction/demolition sectors. In the future, the collection and documentation of such data will be critical in determining if the state mandated recycling levels are met.

**SECTION 4.0**  
**WASTE GENERATION**

4.1 PREVIOUS WASTE GENERATION QUANTITIES

The primary types or categories of solid waste currently being considered in this planning effort include "residential", "commercial/industrial/institutional" and "construction/demolition" wastes. Combined, these categories of waste constitute the "total municipal wastestream" which is the subject of this Appendix. Disposal facilities for sewage sludge are not specifically addressed.

Waste generation estimates are provided for the years 1990, 1995, 2000, 2005 and 2010. Because of the privatized collection and disposal practices discussed previously, records indicating an exact determination of waste generated in the county are not available. Analysis of waste generation rates is complicated by questions of reliability of limited local data, the use of national statistics to supplement local data, and the uncertainty over the actual sources of waste material. For this Appendix, the preparers have attempted to collect as much local data as possible, using it along with other reference data to produce composite waste generation estimates.

The DuPage County Solid Waste Waste-To-Energy Study provided a development of waste generation estimates based primarily upon an analysis of national information from areas comparable to DuPage County in terms of socio-economic and demographic trends. This analysis resulted in the following waste generation estimates:

- Residential	2.1 lbs/capita/day
- Commercial	1.7 lbs/capita/day
- Industrial	1.0 lbs/capita/day
- Construction/Demolition	<u>.7 lbs/capita/day</u>
	5.5 lbs/capita/day

The same study also estimated that the seasonal variability of waste ranged from 75 to 120 percent of the average. It was also estimated that waste generation would increase about 0.34 percent per year during the planning period.

#### 4.2 CURRENT WASTE GENERATION ESTIMATE APPROACH

For this Appendix, the preparers have collected local municipal collection data where available and used this data to the greatest extent possible. This data, limited as it is, was not available at the time of preparation of the generation data presented immediately above. Similarly, the availability of a new modelling program provided by the Illinois Department of Energy and Natural Resources (IDENR) has helped in the development of revised waste generation estimates and waste characterization. The program, "WASTE PLAN - The Integrated Solid Waste Management Planning Tool" was prepared for IDENR by Tellus Institute, Boston, Massachusetts and is recommended for use by Illinois governments involved in solid waste planning. WASTE PLAN provides for the sophisticated modelling of local solid waste management options based on detailed reference data collected on a national basis. Specific local information is input to the model to provide a local model. Finally, recent waste surveys performed by the DuPage Forest Preserve District at the two landfill sites in the county have provided new information about the amount of construction and demolition waste received at the two sites. All of this newly available data has been used for waste generation estimates developed for Plan-1990.

#### 4.3 GENERATION RATES

Sections 4.3.1 through 4.3.3 derive the per capita waste generation quantities for the three principal wastestream components: residential; commercial/industrial/institutional; and construction/demolition. Section 4.3.4 summarizes and totals the

waste generation data for the three individual components.

#### 4.3.1 Residential

In order to estimate residential waste generation, a survey of DuPage municipalities was conducted to determine local waste generation rates. As shown in Table 4-1, the municipal information was limited. It is worth noting that, for the most part, local governments do not have specific information regarding collection and disposal of waste. Surprising is the realization that some municipalities which contract directly for residential waste collection do not even require the reporting by their contractors of collected waste material quantities.

**TABLE 4-1  
RESIDENTIAL WASTE GENERATION**

<u>Municipality</u>	<u>Year</u>	<u>Pounds/Capita/Day</u>
-Addison	1989	4.07
-Bolingbrook	1988	2.98
-Elmhurst	1987	3.51
-Glen Ellyn	1989	4.16
-Villa Park	1988	3.95
-Warrenville	1989	4.34
-Naperville	1989	3.11

The DuPage Forest Preserve District conducted its previously referenced survey of incoming waste at the two landfills during July 1989. The District estimated that the DuPage residential waste generation rate was 2.21 pounds per capita per day (lbs/capita/day). Although this estimate is drawn from the combined residential wastestream including multi-family housing it appears low when compared to both the single family residence data provided in Table 4-1 and the waste generation data developed for other counties in the State of Illinois by their respective planning groups (see Table 4-2). However, the Forest Preserve's estimate does compare favorably with the estimate for waste

generation developed in the County's previous Waste-To-Energy Study.

By averaging the available data, a composite waste generation figure of approximately 3.5 lbs/capita/day is derived. Although this approach represents a rather simplistic approach to justify the differences in waste generation apparent in the above information, comparison of this averaged waste generation figure with other Illinois counties involved in solid waste planning, as summarized in Table 4-2, shows that it is comparable and supportable considering the relative conditions of urban development. Therefore, the initial (1990) residential waste generation rate used in this Appendix will be 3.5 pounds per capita per day (lbs/capita/day).

TABLE 4-2  
SUMMARY OF RESIDENTIAL WASTE GENERATION  
IN OTHER ILLINOIS COUNTIES

<u>County</u>	<u>Year</u>	<u>Pounds/Capita/Day</u>
Lake County	1988	3.2
McClellan County	1990	2.7
Peoria County	1990	2.6
Tazwell County	1989	3.0
Will County	1988	2.1

WASTE PLAN can provide a theoretical breakdown of materials or characterization in the residential wastestream. This characterization is derived by the use of data collected from across the country where waste classification studies have been performed. The sources for this information can be found in "Waste Plan - Default Data Report Version 90-6".

A characterization of the materials in the residential wastestream, developed using the WASTE PLAN model, is provided at the end of Section 4.0. The characterization is useful to indicate the relative contributions of various types of materials to the total residential wastestream.

#### 4.3.2 Commercial/Industrial/Institutional

The derivation of estimates for generation in this waste category is very difficult. It is difficult because the waste category is collected almost exclusively by private haulers who do not have set collection boundaries; do not distinguish between commercial, industrial and institutional accounts; and are generally unwilling to discuss specifics of their collection routes.

WASTE PLAN allows the theoretical derivation of waste generation for this category in the planning area based upon national studies on this category of waste if the following locally specific information is input in the model.

1. Retail & Merchandise - Sales (\$1,000/yr)
2. Furniture & Home Furnishings - Sales (\$1,000/yr)
3. Food Stores - Sales (\$1,000/yr)
4. Restaurants - Sales (\$1,000/yr)
5. Schools - Number of students
6. Nursing Homes - Number of beds
7. Hospitals - Number of beds
8. Office buildings - Total square feet
9. Large and Small Manufacturing - Number of employees

This Appendix has used data exclusively generated by the use of the WASTE PLAN model for the commercial/institutional/industrial wastestream. This has been done because of the lack of supportable local generation data. Input data was supplied, for the most part, by the DuPage County Development Department and is summarized as follows:

1. Retail & Merchandise: \$1,299,159,339 in sales
2. Furniture & Home Furnishings: \$408,413,086 in sales
3. Food Stores: \$1,144,337,154 in sales
4. Restaurants: 679,738,377 in sales
5. Schools: 118,992 students
6. Nursing Homes: 4,613 beds
7. Hospitals: 1,947 beds
8. Office buildings: 35 million square feet
9. Small Manufacturing: 70,553 employees

WASTE PLAN defines this category of waste as "commercial" in

its differentiation from "residential" but the commercial category includes manufacturing (industrial) and institutional (offices, schools, hospitals, etc). For DuPage County all of the employment for manufacturing in the county has been attributed to the "small manufacturing" category in the WASTE PLAN model.

Table 4-3 provides the waste generation estimates derived using WASTE PLAN by sector. The total estimated waste generation quantity (1990) for this wastestream component is 312,860 tons per year or 857 tons per day. Dividing this quantity by 781,200 (1990 DuPage population) results in an estimate of 2.2 pounds per capita per day. The initial (1990) commercial/industrial/institutional waste generation rate used in this Appendix will be 2.2 pounds per capita per day.

**TABLE 4-3  
COMMERCIAL/INDUSTRIAL/INSTITUTIONAL WASTE GENERATION  
BY SECTOR**

	<u>Tons Per Year</u>
-Retail & Merchandise	58,455
-Furniture & Home Furnishings	51,480
-Food Stores	56,440
-Restaurants	40,840
-Schools	9,440
-Nursing Homes	3,680
-Hospitals	6,500
-Office Buildings	47,250
-Small Manufacturing	<u>38,775</u>
	312,860

A characterization of materials in the commercial/industrial/institutional wastestream as generated by the WASTE PLAN model is provided at the end of Section 4.0.

#### 4.3.3 Construction/Demolition

In order to derive the waste generation for this category of waste, the results from the "Survey Of Origin Of Waste: Greene Valley & Mallard Lake" prepared by the Forest Preserve District has been used. Although very limited in its sampling and analysis

period, the data is the best available information for this waste category and is used for the derivation of generation rates.

The DuPage Forest Preserve's "Survey Of Origin Of Waste: Greene Valley & Mallard Lake" provides the first attempt to quantify this category of waste in DuPage County. Previously, this category of waste was believed to represent a considerable quantity but data specific to DuPage County was unavailable. Summarizing the Forest Preserve District's findings, an estimated generation figure of 2.33 pounds per capita per day results (assumed density equals 800 lbs/cu.yd.). This generation estimate does not include dirt/clay/sludge, another category of waste measured by the Forest Preserve District during its survey. Plan-1990 assumes that sludge will be diverted to other processes for disposal in the future. Dirt and clay are considered to be non-waste fill materials which are subject to alternative fill practices. Also, it is unknown how much of the dirt and clay recorded by the Forest Preserve District as arriving at the landfills is actually used for cover material at the sites. The initial (1990) construction/demolition waste generation rate used in this Appendix will be 2.3 pounds per capita per day.

#### 4.3.4 Summary

The above information may be summarized to provide a total base waste generation quantity on a per capita basis:

-Residential	3.5 lbs/capita/day
-Commercial/Industrial/Institutional	2.2 lbs/capita/day
-Construction/Demolition	<u>2.3 lbs/capita/day</u>
Total	8.0 lbs/capita/day

Note that this quantity does not include the category "dirt, clay and sludge" which is recorded by the Forest Preserve District and operators of the two existing landfills. They estimate that this category of incoming waste constitutes approximately 2 more

pounds per capita per day (at an average density of 2,000 lbs/cu.yd.).

#### 4.4 WASTE QUANTITY PROJECTIONS

##### 4.4.1 Quantity Estimates

A base per capita waste generation figure was developed in Section 4.3. The base waste generation figure for 1990 is estimated at 8.0 lbs/capita/day. The United States Environmental Protection Agency estimates that on a national average the per capita waste generation rate will increase at a rate approaching 1 percent per year for the period from 1988 through 2010 (Characterization of Municipal Solid Waste In The United States: 1990 Update). The generation rates for the residential and commercial/institutional/industrial components have been increased at this annual rate in the following waste generation estimates. The construction/demolition component, assumed to be near peak at the present time, has not been increased and has been held constant over the planning period. Table 4-4 provides waste generation estimates for DuPage County over the 20 year planning period.

**TABLE 4-4  
WASTE GENERATION ESTIMATES  
FOR DUPAGE COUNTY**

<u>Year</u>	<u>Population</u>	<u>Per Capita Generation(lbs)</u>	<u>Tons of Waste Generated</u>	
			<u>Per Day</u>	<u>Per Year</u>
1990	781,200	8.0	3,125	1,140,625
1995	847,600	8.3	3,518	1,284,070
2000	901,178	8.6	3,875	1,414,375
2005	936,300	8.9	4,166	1,520,590
2010	985,000	9.3	4,580	1,671,700

\*excludes dirt/clay/sludge (~2 lbs/capita/day)

#### 4.4.2 Considerations For Application Of Waste Quantity Projections

In the consideration and design of any solid waste disposal facilities the size (capacity) of the facilities has a direct bearing on cost and, for landfills, life expectancy. The waste generation quantities presented in Table 4-4 must be regarded as estimates of a theoretical average unless later confirmed by actual measurement of waste. Several variables will influence this expected waste generation including:

- Are the assumptions made about waste generation accurate?
- What is the variability in the daily waste generation amount?
- Are the estimates for future population accurate?
- Are the assumptions for increase in waste generation and changes in the wastestream which influence waste generation accurate?

Prior to the construction of capital intensive facilities targeting processing or disposal of the total wastestream, additional data should be collected to determine actual waste quantity and daily variability. Such information will also be vital to the County's efforts to document recycling levels. Unfortunately, the collection of more detailed information will be impossible without increased reporting requirements from haulers and municipalities. This seems unlikely in the near future based upon the general unavailability of information produced during previous surveys by the County's Solid Waste Division.

The desire and need for detailed information about solid waste generation in a given area is a strong incentive for the implementation of measures to control the delivery of wastes generated in an area in order to gauge overall quantities. Facilities which deal with only a fraction of the total wastestream (i.e. the Intermediate Processing Facilities as discussed in Plan-1990) are less susceptible to these sensitivities because of the

smaller percentage of materials that they are serving. Nevertheless, even for these facilities, a control mechanism to gauge, limit, and allocate flow is worthy of consideration.

appa1-4

# CHARACTERIZATION OF MATERIALS

## RESIDENTIAL WASTE STREAM SUMMARY

### TOTAL RESIDENTIAL WASTES GENERATED (TONS PER YEAR):

WASTE NAME	1990
Newspapers	40,917
Books and Magazines	27,445
Office Paper	2,994
Commercial Printing Paper	7,485
Tissue and Towel	14,970
Nonpackaging Paper(junkmail)	5,988
Packaging Paper/Paperboard	14,471
Corrugated Cardboard	25,449
Glass Containers(clear)	25,948
Glass Containers(green)	13,972
Glass Containers(amber)	8,982
Misc Glass	4,990
Aluminum Containers/packaging	4,990
Misc Scrap Aluminum	2,994
Ferrous Containers	12,475
Major Appliances	13,972
Miscellaneous Ferrous Scrap	19,461
Plastic Containers/Packaging	19,461
Nonpackaging Plastic	15,968
Leaves	71,356
Yardwaste (grass and brush)	50,897
Stumps	13,972
Woodwaste (pallets, etc)	2,994
Foodwaste	31,935
Textiles	8,982
Leather/Rubber	9,980
Tires	6,487
Ceramics, Misc Inorganics	15,469
Miscellaneous Organics	3,992
<hr/>	
TOTALS	498,992

### PER CAPITA WASTE GENERATION (POUNDS PER PERSON PER DAY)

WASTE NAME	1990
Newspapers	0.29
Books and Magazines	0.19
Office Paper	0.02
Commercial Printing Paper	0.05
Tissue and Towel	0.11
Nonpackaging Paper(junkmail)	0.04
Packaging Paper/Paperboard	0.10
Corrugated Cardboard	0.18
Glass Containers(clear)	0.18
Glass Containers(green)	0.10
Glass Containers(amber)	0.06
Misc Glass	0.04
Aluminum Containers/packaging	0.04
Misc Scrap Aluminum	0.02
Ferrous Containers	0.09
Major Appliances	0.10
Miscellaneous Ferrous Scrap	0.14
Plastic Containers/Packaging	0.14
Nonpackaging Plastic	0.11
Leaves	0.50
Yardwaste (grass and brush)	0.36
Stumps	0.10
Woodwaste (pallets, etc)	0.02
Foodwaste	0.22
Textiles	0.06
Leather/Rubber	0.07
Tires	0.05
Ceramics, Misc Inorganics	0.11
Miscellaneous Organics	0.03
<hr/>	
TOTAL	3.50

## CHARACTERIZATION OF MATERIALS

### COMMERCIAL WASTE STREAM SUMMARY

#### TOTAL COMMERCIAL WASTES GENERATED (TONS PER YEAR):

WASTE NAME	1990
Newspapers	7,265
Books and Magazines	0
Office Paper	34,961
Commercial Printing Paper	0
Tissue and Towel	0
Nonpackaging Paper(junkmail)	23,535
Packaging Paper/Paperboard	32,295
Corrugated Cardboard	121,007
Glass Containers(clear)	3,223
Glass Containers(green)	1,823
Glass Containers(amber)	1,056
Misc Glass	1,660
Aluminum Containers/packaging	873
Misc Scrap Aluminum	0
Ferrous Containers	1,465
Major Appliances	0
Miscellaneous Ferrous Scrap	6,133
Plastic Containers/Packaging	8,861
Nonpackaging Plastic	10,171
Leaves	0
Yardwaste (grass and brush)	3,254
Stumps	0
Woodwaste (pallets, etc)	11,694
Foodwaste	25,830
Textiles	1,978
Leather/Rubber	0
Tires	0
Ceramics, Misc Inorganics	6,667
Miscellaneous Organics	9,111
<hr/>	
TOTALS	312,860

#### COMPOSITION OF COMMERCIAL WASTES (IN PERCENT):

WASTE NAME	1990
Newspapers	2.32
Books and Magazines	0.00
Office Paper	11.17
Commercial Printing Paper	0.00
Tissue and Towel	0.00
Nonpackaging Paper(junkmail)	7.52
Packaging Paper/Paperboard	10.32
Corrugated Cardboard	38.68
Glass Containers(clear)	1.03
Glass Containers(green)	0.58
Glass Containers(amber)	0.34
Misc Glass	0.53
Aluminum Containers/packaging	0.28
Misc Scrap Aluminum	0.00
Ferrous Containers	0.47
Major Appliances	0.00
Miscellaneous ferrous Scrap	1.96
Plastic Containers/Packaging	2.83
Nonpackaging Plastic	3.25
Leaves	0.00
Yardwaste (grass and brush)	1.04
Stumps	0.00
Woodwaste (pallets, etc)	3.74
Foodwaste	8.26
Textiles	0.63
Leather/Rubber	0.00
Tires	0.00
Ceramics, Misc Inorganics	2.13
Miscellaneous Organics	2.91

**SECTION 5.0**  
**NEEDS ASSESSMENT**

**5.1 EXISTING DISPOSAL CAPABILITIES**

The principal method of disposal in DuPage County at this time is landfilling. The vast majority of waste is disposed at Mallard Lake and Greene Valley landfills. As reported in Section 2.0 of this Appendix, the Illinois Environmental Protection Agency (IEPA) has estimated that the disposal capacity in northeastern Illinois including Mallard Lake and Greene Valley will be completely depleted sometime between 1995 and 1997 if existing conditions continue. This statement assumes that waste generation levels will remain virtually unchanged; that artificial controls or limits will not be placed on the transport of waste; and that no significant new disposal capacity will be provided in the region during the time period.

On a strictly local basis, the two existing landfills in DuPage County represent a substantial capability to handle DuPage waste quantities if limited in acceptance to this material. According to the Forest Preserve District of DuPage the two sites had a combined total remaining capacity of 63,308,758 gate yards at the end of July 1990 (one ton = 3 gate yards). Table 5-1 compares the theoretical waste generation quantities for DuPage County to the remaining landfill capacity. The column "Tons/Year" subtracts landscape waste (at 13 percent of the theoretical total for this waste component) and does not include the category dirt/clay/sludge. The first boxed column shows cumulative cubic yards landfilled without including dirt/clay/sludge. The second boxed column includes a dirt/clay/sludge component factored in at 2 pounds per capita per day throughout the planning period. Both columns successively add waste quantities on a year-to-year basis. The table assumes that the waste is allocated equally to the two sites during the time period.

TABLE 5-1

COMPARISON OF DUPAGE WASTE TO LANDFILL CAPACITY

YEAR	TOTAL TONS PER YEAR	TOTAL YARDS PER YEAR	CUMULATIVE YARDS	+ D/C/S TONS/YEAR	D/C/S YARDS/YEAR	CUMULATIVE YARDS
*****	*****	*****	*****	*****	*****	*****
1990	992,281	2,976,842	2,976,842	285,138	855,414	3,832,256
1991	1,011,489	3,034,468	6,011,309	289,985	869,956	6,881,265
1992	1,031,012	3,093,035	9,104,344	294,832	884,497	9,988,841
1993	1,050,852	3,152,555	12,256,899	299,680	899,039	13,155,938
1994	1,071,014	3,213,042	15,469,942	304,527	913,580	16,383,522
1995	1,091,503	3,274,509	18,744,451	309,374	928,122	19,672,573
1996	1,109,860	3,329,580	22,074,031	313,285	939,856	23,013,887
1997	1,128,503	3,385,508	25,459,539	317,196	951,589	26,411,128
1998	1,147,437	3,442,310	28,901,849	321,108	963,323	29,865,172
1999	1,166,664	3,499,992	32,401,841	325,019	975,056	33,376,897
2000	1,186,191	3,558,572	35,960,413	328,930	986,790	36,947,203
2001	1,202,292	3,606,875	39,567,289	331,494	994,481	40,561,770
2002	1,218,626	3,655,878	43,223,167	334,058	1,002,174	44,225,340
2003	1,235,194	3,705,582	46,928,749	336,622	1,009,865	47,938,614
2004	1,252,001	3,756,004	50,684,753	339,186	1,017,557	51,702,310
2005	1,269,049	3,807,146	54,491,899	341,750	1,025,249	55,517,147
2006	1,289,222	3,867,667	58,359,566	345,305	1,035,914	59,395,480
2007	1,309,701	3,929,104	62,288,670	348,860	1,046,579	63,335,249
2008	1,330,489	3,991,468	66,280,139	352,415	1,057,244	67,337,383

=====

D/C/S means Dirt/Clay/Sludge

Table 5-1 indicates that current waste generation levels for DuPage would fill the two landfills around 2007, three years short of the end of the planning period. The inclusion of the category dirt/clay/sludge (held consistent in per capita generation) in the totals shortens the remaining life by approximately 1 year.

## 5.2 EFFECTS OF REVISED AGREEMENTS FOR OPERATION AT MALLARD LAKE AND GREENE VALLEY LANDFILLS

On November 28, 1990 the Forest Preserve District approved amendments to the operation contracts for both sites. Copies of the amendments can be found at the end of this Section. The amendments take effect on June 1, 1992 and essentially supersede the agreements for operation now in-place. The amendments make sweeping changes in the terms of agreement for operation at the two sites. For the purposes of this Appendix, the key provision in the amendments is the manner in which waste receipt is addressed.

The amendments constitute "put or pay" agreements which are common for solid waste disposal facilities. The Forest Preserve District agrees that not less than 468,750 tons (1.5 million cubic yards) of waste will be delivered ("put") to each site on an annual basis. If the agreed minimum quantity is not delivered ("put"), then the Forest Preserve District agrees to "pay" the operator for the difference between the agreed minimum quantity and the actual delivered quantity. Therefore, the Forest Preserve District has committed to the delivery of at least 937,500 tons (3 million cubic yards) on an annual basis until the two facilities are completed (filled) to their permitted capacities.

The Forest Preserve District in its commitment for delivery of waste retains "the right to limit, and shall have the sole responsibility for limiting, disposal of waste at the [sites] to sources within the corporate limits of DuPage County, Illinois and from the following communities: Bartlett, Bensenville, Burr Ridge,

Hanover Park, Hinsdale, Naperville, Roselle, Wayne, and Woodridge." The Forest Preserve District may permit the acceptance of waste at the sites from any other source. Clearly, the intent of the provisions is to limit use of the two sites to DuPage communities so long as the contractual minimum amount of waste is produced from this source. What is the effect of this type of control on the disposal of waste in DuPage County?

The effect is evident in the information presented in Table 5-1. Although Table 5-1 assumes the imposition of control of waste receipt immediately, the effect of limiting waste receipt at the two sites is one of extending the lives of the two sites compared to the likely fill dates under previous conditions.

However, Table 5-1 also shows that simply limiting waste receipt to DuPage waste alone will not in itself satisfy the solid waste disposal needs for DuPage during the 20 year planning process. Limiting waste receipt to the agreed minimum quantity (3 million cubic yards or 937,500 tons annually) would most likely provide more than 20 years of capacity but waste quantity estimates derived in Section 4.0 indicate that DuPage County generated 3,650,000 cubic yards (1,140,625 tons) in 1990. Therefore, actions to reduce the amount of waste sent by DuPage County to the two landfills must be taken to allow disposal capacity for the 20 year planning period. On the other hand, extreme reductions in the amount of waste sent by DuPage County to the two landfills could potentially place the Forest Preserve District in jeopardy of its "put or pay" agreement. Under this condition the Forest Preserve District will have to consider new amendments to the operating contracts if there is a desire to further extend the lives of the landfills.

Another important consideration exists in the amendments to the operating contracts related to the placement of daily cover at the landfills. The use of cover (soil) material at landfills is

fully described in Appendix A-4 but for explanation purposes here the reader should be aware that waste at a landfill is covered on a daily basis with "daily cover". The purposes for placing daily cover include limiting odors and vector (pest) control as well as minimizing blowing litter and the infiltration (seepage) of precipitation. State regulations require the placement of:

- a. A uniform layer of at least 0.15 meter (six inches) of clean soil material; or
- b. Alternative materials or procedures, including the removal of daily cover prior to additional waste placement, provided that the alternative materials or procedures achieve equivalent or superior performance to the requirements of a in the following areas:
  1. Prevention of blowing debris
  2. Minimization of access to the waste by vectors
  3. Minimization of the threat of fires at the open face; and
  4. Minimization of odors.

The amendments to the operating contracts allow the operators to use alternative materials for up to 40 percent of the required daily cover, subject to IEPA permit approval. This could substantially increase the amount of "airspace" for filling with waste rather than soil for daily cover. This is especially true when we considers that although the regulatory standard for daily cover is a minimum of six inches, in practical terms it usually requires an average of 12 or more inches to cover all exposed waste with a minimum of 6 inches. This potential savings in space is not reflected in Table 5-1.

As stated above, simply limiting waste disposal at Mallard Lake and Greene Valley landfills to waste generated by DuPage County will most likely not provide 20 years of capacity. However, actions to reduce, divert and recycle waste could provide sufficient capacity. The effects of these activities will be discussed in Appendices A-2 (Waste Reduction, Recycling And Landscape Waste Diversion - Phase II) and A-3 (Materials Recovery

By Waste Processing - Phase II). Additional methods to process waste prior to landfilling are discussed in Appendix A-4 (Final Waste Processing And Disposal - Phase III)

### 5.3 SUMMARY

Information presented in this Appendix indicates that the predominate existing method of disposal in DuPage County, landfilling in the two existing landfills, and the current level of waste reduction, recycling and waste diversion activities will be inadequate to meet the anticipated 20 year planning needs. Alternatives which will either provide new disposal capacity or preserve existing disposal capacity must be considered.

appal-5

---

**GREENE VALLEY LANDFILL OPERATING AGREEMENT  
INTENTIONALLY OMITTED**

---

---

**MALLARD LAKE LANDFILL OPERATING AGREEMENT  
INTENTIONALLY OMITTED**

---

DUPAGE COUNTY SOLID  
WASTE MANAGEMENT PLAN

APPENDIX A-2

WASTE REDUCTION, RECYCLING AND LANDSCAPE  
WASTE DIVERSION ASSESSMENT  
(PHASE I WASTE MANAGEMENT)

1.0	INTRODUCTION.....	1-1
1.1	Contents.....	1-1
1.2	Purpose.....	1-1
2.0	RECYCLING AND WASTE REDUCTION ASSESSMENT.....	2-1
2.1	Existing Conditions In DuPage County.....	2-1
2.1.1	Dropoff Centers.....	2-1
2.1.2	Buyback Centers.....	2-5
2.1.3	Curbside Recycling Programs.....	2-14
2.1.4	Commercial, Industrial and Institutional Recycling Programs.....	2-25
2.1.5	Public Sector.....	2-28
2.1.6	Markets For Materials.....	2-29
2.2	Waste Reduction Alternatives.....	2-32
2.2.1	Source Reduction.....	2-36
2.2.1.1	Regulatory.....	2-36
2.2.1.2	Non-regulatory.....	2-38
2.2.2	Waste Prevention.....	2-40
2.2.3	Pollution Abatement.....	2-41
2.2.3.1	Household Hazardous Waste.....	2-43
2.2.3.2	Batteries.....	2-47
2.2.3.3	Used Motor Oil.....	2-49
2.2.3.4	Tires.....	2-52
2.3	Recyclable Material Quantities and Recovery.....	2-54

2.4	Recycling System Description.....	2-56
2.4.1	Roles And Responsibilities.....	2-56
2.4.1.1	County Government.....	2-56
2.4.1.2	Municipal Government.....	2-58
2.4.1.3	Township Government.....	2-59
2.4.1.4	Not-For Profit Organizations.....	2-59
2.4.1.5	Commercial/Industrial/Institutional Entities.....	2-60
2.4.1.6	State and Federal Government.....	2-61
2.4.2	Residential Components.....	2-61
2.4.2.1	Dropoff Facilities.....	2-62
2.4.2.2	Curbside Collection.....	2-67
2.4.2.3	Intermediate Processing Facilities.....	2-71
2.4.3	Commercial/Industrial/Institutional Components.....	2-77
2.4.4	Public Sector Components.....	2-80
2.4.5	Construction/Demolition Waste.....	2-81
2.4.6	Dirt/Clay/Sludge.....	2-83
2.5	Implementation.....	2-83
3.0	LANDSCAPE WASTE.....	3-1
3.1	Background.....	3-1
3.2	Existing Conditions.....	3-3
3.3	Landscape Waste Quantities.....	3-4
3.4	Landscape Waste Diversion System Description.....	3-7
3.4.1	Roles And Responsibilities.....	3-7
3.4.2	Available Technologies.....	3-11
3.4.2.1	Direct Land Application.....	3-11
3.4.2.2	Windrow Composting.....	3-14
3.4.2.3	Emergent Technologies.....	3-17
3.4.3	Facilities.....	3-20
3.4.3.1	DuPage County.....	3-20
3.4.3.2	City of Naperville.....	3-24
3.4.3.3	Settler's Hill.....	3-25

3.4.3.4	Oswego.....	3-26
3.4.3.5	Land & Lakes.....	3-27
3.5	System Implementation.....	3-27
3.5.1	Educational Programs.....	3-27
3.5.2	Diversion System.....	3-29
3.5.2.1	Collection.....	3-29
3.5.2.2	Processing.....	3-32
3.5.3	Monitoring and Evaluation.....	3-37
4.0	FUNDING.....	4-1
4.1	Introduction.....	4-1
4.2	Capital Costs.....	4-1
4.2.1	Anticipated Expenses.....	4-1
4.2.2	Funding Approaches.....	4-2
4.3	Operation.....	4-3
4.4	Revenues.....	4-4
4.4.1	Landfill Tipping Fee Surcharges.....	4-4
4.4.2	Grant Funds.....	4-5
4.4.3	IPF Revenues.....	4-6
5.0	RECOMMENDATIONS.....	5-1
5.1	Waste Reduction.....	5-1
5.2	Recycling.....	5-3
5.2.1	Residential.....	5-4
5.2.2	Commercial/Institutional/Industrial.....	5-8
5.2.3	Public Sector.....	5-9
5.2.4	Construction/Demolition Waste.....	5-10
5.2.5	Municipal Wastewater Sludge.....	5-11
5.3	Landscape Waste.....	5-11
5.4	Expected Effects Of Waste Reduction, Recycling And Diversion (Phase II) Activities On Disposal Capacity.....	5-14

---

**DUPAGE COUNTY  
SOLID WASTE MANAGEMENT PLAN  
APPENDIX A-2 INTENTIONALLY OMITTED**

---

**DUPAGE COUNTY SOLID  
WASTE MANAGEMENT PLAN**

**APPENDIX A-3**

**MATERIAL RECOVERY BY  
WASTE PROCESSING  
(PHASE II WASTE MANAGEMENT)**

1.0	INTRODUCTION.....	1-1
1.1	Overview.....	1-1
1.2	Processing Objectives.....	1-2
2.0	MATERIAL RECOVERY ALTERNATIVES.....	2-1
2.1	Introduction.....	2-1
2.2	Source Separation.....	2-1
2.3	Collection-Based Programs.....	2-3
2.4	Post-Collection Processing.....	2-4
2.4.1	Dump And Pick.....	2-5
2.4.2	Mechanically-Assisted Hand Separation.....	2-6
2.4.3	Mechanical Processes.....	2-7
2.4.3.1	Size Reduction.....	2-9
2.4.3.2	Waste Classification.....	2-10
2.4.3.3	Automated Metal Recovery.....	2-15
3.0	SYSTEM APPLICATIONS.....	3-1
4.0	PROCESS DESIGN CONSIDERATION.....	4-1
4.1	Introduction.....	4-1
5.0	SITING OBJECTIVES AND CONSTRAINTS.....	5-1
5.1	Introduction.....	5-1
5.2	Minimum State Requirements.....	5-2
5.3	Land Requirements and Availability.....	5-3

5.4 Transportation and Market Accessibility.....5-3

5.5 Proximity to Utilities.....5-4

5.6 Site Subsurface Conditions.....5-4

5.7 Economic and Environmental Impacts.....5-5

5.8 Summary.....5-5

6.0 ENVIRONMENTAL CONCERNS.....6-1

6.1 Facility Impacts.....6-1

6.2 Residue Management.....6-2

7.0 COST.....7-1

7.1 Introduction.....7-1

8.0 IMPLEMENTATION.....8-1

9.0 RECOMMENDATIONS.....9-1

9.1 Recommendations.....9-1

9.2 Expected Effects of Materials Recovery by Waste Processing (Phase III) Activities on Disposal Capacity.....9-4

## SECTION 1.0 INTRODUCTION

### 1.1 OVERVIEW

Appendix A-3 addresses alternatives available to DuPage County for processing of its wastestream after Phase I source separation but prior to final processing and disposal as identified in Phase III. This analysis of "processing" options reflects the recognition that it is apparently no longer acceptable to the public to merely find a place where mixed municipal wastes can be buried or burned. Rather, the municipal wastestream must be viewed as a heterogeneous mix of materials which is best managed by considering its many constituent elements, and configuring an overall system which collectively addresses the various recovery, reuse, and disposal requirements of these constituent elements. Thus, whereas Appendix A-4 addresses the various options available to the County for ultimate processing/disposal (i.e., landfilling, waste-to-energy, etc.), this Appendix addresses preceding processes which can be applied to improve the material recovery and/or environmental protection afforded by the overall system.

In this Appendix, the focus has been intentionally placed on the objectives of processing, rather than on specific equipment systems. The importance of focusing on process objectives cannot be overstated in the consideration of waste processing options. That is, prior to selection or configuration of a facility or program to process a community's wastes, it is absolutely essential that the composition of wastestreams to be processed at a particular step in the waste management system be properly identified and the objectives of the desired processes, usually defined by the subsequent processing or disposal parameters, be explicitly determined. With this information, it can be determined where in the generation/collection disposal cycle it is most effective to effect further processing, and a specific program

and/or facility can be specified to achieve the desired results. Unless this objectiveness-oriented approach is used, it is possible to transplant a type of processing facility used elsewhere, but the facility may duplicate a process already performed or may produce a product for which there is no market. For example, the facilities and programs already included in the County's Recycling Plan substantially alter the composition of the remaining wastestream, and therefore are important considerations in the selection of supplementary waste processing facilities and programs.

The sections which follow examine solid waste processing by first examining the various points at which waste processing can occur. That is, processing can occur at the point of generation, during collection, or after collection has occurred. Various processes that can be applied at these different points are then explored. Example applications of these processes as they relate to various types of final process/disposal facilities (e.g., landfills, compost facilities, and waste-to-energy facilities) are then discussed. This Appendix then concludes with an analysis of the waste processing options most directly applicable to the specific waste disposal facilities being considered for DuPage County.

## 1.2 PROCESSING OBJECTIVES

The effective management of municipal solid waste (MSW) requires an understanding of the many unique characteristics of the municipal solid wastestream and how these characteristics affect the collection, processing, and disposal needs of the entire solid waste management system. Taken as a whole, municipal solid waste is heterogeneous mixture of paper, glass, metal, plastic, landscape wastes, food, grit and various other materials and components discarded by a diversity of residential, commercial, institutional, and industrial sources. Both the quantity and

composition of the MSW generated in a community can vary on a seasonal, monthly, weekly, and even daily basis.

Most of the materials which enter the municipal solid wastestream have vastly different properties and characteristics which can significantly affect the manner in which they are best collected, handled, processed, and disposed. For example, a large fraction of the municipal solid wastestream, including paper, glass, metals, and plastics, is potentially recyclable. Much of the wastestream is combustible or can be composted. However, some materials like discarded hot water heaters, washing machines, dryers, and even smaller glass, metal, and other noncombustible or nondegradable materials may create processing problems in composting or combustion facilities. Other materials, including household cleaners, discarded paint, varnish, automotive products, etc., are undesirable and can pose a hazard to the environment and health and safety of workers when improperly handled in solid waste processing and disposal facilities.

There is a growing recognition of the need to separate municipal solid waste in a manner which allows for more appropriate processing of its individual components. This process, termed "materials recovery", can achieve many simultaneous or independently structured goals and objectives, including:

1. The recovery of recyclable materials;
2. The removal of undesirable components;
3. Improving the quality of waste as a feedstock for subsequent processes; and
4. Reducing the volume of material to be transported, processed or disposed.

In discussing materials recovery, it is important to focus on the processing objective or goal within a waste management system rather than a prior selection of a technology. Each of the materials recovery alternatives discussed below can be used to

achieve, at least in part, similar objectives. Decisions concerning which alternative is best for any particular application require a careful consideration of the additional components and overall structure of the waste management system in a community. The exact configuration of a materials recovery system will depend on the specific needs of the community and the structure of its solid waste management system.

appa3-1

## SECTION 2.0

### MATERIALS RECOVERY ALTERNATIVES

#### 2.1 INTRODUCTION

There are several alternative methods of materials recovery available. Materials recovery processes are generally classified by point of application in a waste management system and by the type of process or technology which is applied. Materials recovery can occur at any of several points in a solid waste management system ranging from the point of generation to the point of disposal or anywhere in between. The detailed design and technical configuration of individual materials recovery options will vary based on local considerations. Materials recovery systems typically fall into one of the following general categories:

1. Source Separation Programs (including deposit programs and container collection programs);
2. Collection-Based Sorting Programs; or
3. Post Collection Processing Systems, including:
  - a. Post-Collection Dump and Pick;
  - b. Mechanically-Assisted Hand Separation; and
  - c. Mechanical Separation Processes.

Categories 1 and 2 constitute Phase I waste management activities for the County's proposed system as discussed in Appendix A-2. The following sections provide general descriptions of each of these categories of materials recovery processes. An additional discussion of source separation programs and collection-based sorting programs is worthwhile within the overall context of "processing" discussed in this Appendix.

#### 2.2 SOURCE SEPARATION

Although often overlooked in the discussion of waste processing methods, source separation, properly applied, can be an effective way of avoiding the need for more complicated and

expensive sorting methods of later stages during the collection/disposal chain. Source separation is a method of materials recovery which involves the waste generator. Most communities practice some degree of source separation in requiring the separate collection of oversized bulky wastes like furniture, washing machines, hot water heaters, etc. With the recent implementation of a statewide ban on disposal of landscape waste in Illinois landfills, landscape wastes are now separated from other types of municipal waste in Illinois communities. Source separation programs can be developed to address a wide range of additional waste materials and components, including recyclable materials generated by residential and commercial establishments and household hazardous wastes.

An advantage of source separation is the heightened awareness and sense of responsibility which these programs can instill in the waste generator. Source separation and the educational programs which typically ensue, highlight the important link between consumption and disposal. They demonstrate the vital contribution which every individual waste generator can make toward managing solid waste through selective purchasing and enlightened disposal.

Although involvement by the waste generator is a key advantage of source separation, the dependence on participation by generators also is the principal weakness in source separation programs. That is, the extent of materials recovery achieved by such programs is directly dependent on the percentage of generators that participate in the program, and the quality of efforts expended by those participants. Source separation programs require a continuing public education program to enlist and maintain participation, and to ensure that participants are fully informed of current requirements for material segregation and preparation (e.g., washing of bottles and cans) by generators.

To increase program convenience and entice participation, many

recycling programs require less sorting by the generator by providing more collection-based or post-collection processing. For example, most curbside collection programs for recyclables in DuPage County allow residents to commingle materials in a single container, relying on collectors or processing facilities (such as the North Intermediate Processing Facility currently under construction in DuPage County) for later segregation of the source-separated but commingled recyclables.

### 2.3 COLLECTION-BASED PROGRAMS

Municipal waste generated within the industrial, commercial/institutional, and residential sectors of a community is generally subject to some form of collection and transportation prior to disposal. Municipal waste collection can be handled privately or publicly. The collection of MSW typically involves door-to-door stops by collection crews who empty waste containers (generally garbage cans or bags for residential waste and dumpsters or bins for commercial, institutional, or industrial waste) into a vehicle (typically a compaction-type truck) which then transports the waste to a disposal facility. This door-to-door method of servicing waste generators offers a number of opportunities for the segregation and processing of mixed municipal waste.

Collection-based sorting programs can assume a variety of forms, determined principally by the types of materials targeted for collection and the types of generators served. The key feature which distinguishes a collection-based sorting program is that collectors play a key role in accomplishing the sorting tasks.

Materials can be partially source-separated, as in some residential recycling programs where homeowners are asked to place materials like tin cans, newspaper, glass and plastic containers, etc. in a separate container. Often these materials are then

separated at the curb and placed into separate bins by the collection vehicle driver.

An advantage of this type of program over a non-commingled system is that it enables the participant to minimize the amount of space required to store recyclable materials because only one container is required to hold all materials and increases the overall program convenience. By increasing convenience, recycling program managers hope to secure a greater level of program participation and a concurrent increase in the rate of materials recovery.

Materials like used batteries, motor oil, household hazardous waste, as well as various types of recyclable paper, glass, metal and plastics can be sorted, at least in part, during collection. A disadvantage of collection-based programs is that they tend to slow down the collection process. This can result in the need for larger crews, a greater number of collection vehicles to service the same number of units, and higher overall collection costs.

#### 2.4 POST-COLLECTION PROCESSING

Post-collection processing systems focus on sorting MSW after it has been collected. These systems shift at least part of the responsibility for sorting waste materials from the generator or collector (who may not always be the best trained or qualified party) to a central entity which is better able to assume responsibility for finished product quality. Post-collection processing systems have been developed to handle materials ranging from commingled recyclables to mixed residential or commercial wastes. The types of post-collection processing systems available range in application from simple dump-and-pick operations to a complex series of mechanical sorting processes.

#### 2.4.1 Dump And Pick

Dump-and-pick operations focus on sorting and segregating mixed municipal waste following collection. Municipal waste is brought to a receiving area where it is dumped onto a tipping floor. There the waste is inspected and targeted materials are removed. Targeted materials can include: (1) waste which is considered nonprocessable in subsequent processing operations such as oversized bulky or white goods destined for combustion or composting; (2) materials like batteries, cans of paint, gasoline or other household hazardous wastes which threaten human health, safety, or the environment; or, (3) various recyclable materials.

Dump-and-pick operations are common at commercial transfer station sites where high-value materials such as old corrugated containers (OCC) or office paper are removed prior to baling and transportation to a landfill. These operations generally target loads of municipal waste which are expected to contain large quantities of recyclable material such as those from commercial operations (i.e., "clean loads"), while passing the more contaminated residential wastes directly through to transfer/loading operations.

The principal advantage of dump-and-pick operations is the low capital cost when they are incorporated as part of a transfer disposal facility. The main capital cost is the cost of the additional required floor space. However, such operations are not well suited to consistently separating large quantities of material, and make it difficult to maintain a high quality of recovered materials.

Numerous waste transfer facilities use dump-and-pick sorting for the recovery of targeted materials. For example, the AAA Transfer Station and Recycling Center in McLean County, Illinois which processed over 33,000 tons of solid waste in 1988, manually

sorts through and removes OCC and other material from selected loads of waste (primarily commercial). The OCC is baled and the remaining waste is compacted and shipped to a landfill. The revenue derived through the sale of recovered recyclable material is complemented by an avoided disposal cost which results from a reduction in the volume of waste taken to the landfill. Most private operations will target only those recyclable materials which can be recovered and sold at a cost which is less than the economic benefits, typically comprised of material revenues and avoided disposal costs.

Dump-and-pick operations can also be located at landfills, waste-to-energy plants, or any other municipal waste processing operation which accepts mixed municipal waste. The degree of processing achieved by these facilities is limited by the capability of workers to thoroughly sort through deposited waste and recover targeted materials. Although this sounds like a relatively simple task, the action of sorting through large volumes of waste while not impeding the flow of the waste can require the use of complex handling mechanisms and procedures as quantities increase.

#### 2.4.2 Mechanically-Assisted Hand Separation

The speed and efficiency of the material separation achieved through dump-and-pick operations can be improved by adding mechanical systems to enhance hand separation. Mechanically-assisted hand separation systems typically consist of a series of conveyors which transport the municipal waste past a series of picking stations. Workers at these picking stations systematically remove targeted materials. The remaining waste is transported along the conveyor either directly to a truck or perhaps first to a baler, for subsequent transport to the disposal facilities.

The degree of materials recovery which can be achieved through

mechanically-assisted hand separation is a function of the number of material sorting personnel employed and the types of materials targeted. That is, although manual sorting can in theory achieve a very high level of quality control, business economics dictate throughput and staffing limits which decrease the quality which can actually be achieved. Therefore, the number of workers assigned to a picking line, the physical configuration of their work stations, the speed at which the picking conveyor moves, the depth of material on the belt, and the materials which each worker must segregate, all influence the overall effectiveness and especially the cost-effectiveness of a mechanically-assisted hand separation process. Mechanically-assisted hand separation systems can be provided at virtually any type of solid waste facility to recover recyclable materials, to remove undesired or hazardous materials, to reduce the volume and to improve the quality of any material requiring further processing.

The Wastech Inc. transfer station in Portland, Oregon is an example of a commercial system which directs loads of municipal solid waste containing old corrugated containers (OCC) and office paper to a line of processing equipment which includes a series of trommels (see discussion of mechanical processes below) and sorting conveyors, where workers pick and sort materials from the waste. Hand picking is commonly used to recover materials like newspaper, OCC, glass and plastics which are not readily separated from mixed municipal waste by mechanical devices. However, mechanical processes can be used in place of hand picking to recover a variety of material products from municipal solid waste or to prepare it in various ways for further processing.

#### 2.4.3 Mechanical Processes

Mechanical processes can serve a variety of functions in the management of municipal solid waste. These systems are commonly applied in the processing of commingled recyclable material and

mixed municipal waste. Although the overall systems used to process mixed municipal wastes differ significantly from those used to process commingled recyclables, many of the unit processes used in the two system types are similar. Examples of unit processes employed in both types of systems include size reduction, classification by density or size, and automated recovery of ferrous and aluminum metals.

Facilities designed to process mixed municipal waste also typically use both hand sorters and mechanical processes. There are several mixed waste stand-alone processing plants currently operating in the United States, including those operated by: the X-L Disposal Company in Crestwood, Illinois (technology by NRT, Inc.); Reuter, Inc. in Eden Prairie, Minnesota (technology by Buhler-Miag); ORFA in Philadelphia, Pennsylvania; National Ecology in Cockeysville, Maryland; and Future Fuel (technology by Lundell) in Thief River Falls, Minnesota. The interest in mixed waste processing systems is increasing despite the many problems which have been experienced at several of these operations. There are also a number of mixed waste processing systems employed at various combustion facilities. In fact, refuse derived fuel (RDF) facilities employ, by definition, mechanical waste processing systems. However, even facilities which utilize "mass-burn" combustion equipment may utilize mechanical or manual processing prior to combustion.

One of the most significant problems encountered in the processing of mixed municipal waste to recover recyclable materials concerns the potential contamination when recyclable materials are mixed with other components of the wastestream. Recyclable materials which are contaminated in this manner may be difficult to market. The sensitivity of markets to contamination is increasing as the number of recycling programs throughout the nations grows. Generally, source separated recyclables will exhibit a higher degree of cleanliness which is desirable to end markets.

Other problems encountered in the processing of mixed municipal waste and commingled recyclables relate to the availability of equipment to achieve the actual separation. Because of technological limitations in the capability of equipment to effectively separate certain components of the wastestream, such as plastics, glass, and individual grades of paper, human sorting is still required. Simply put, it is difficult to design machines which provide specific task functions on a feedstock which has ever-changing characteristics. However, the technology for mechanically achieving materials separation has advanced considerably in recent years and can be expected to advance in the future.

Mechanical processing equipment, described in the following sections, is generally classified by its intended function which can include:

1. Size Reduction;
2. Waste Classification; or
3. Automated Metal Recovery.

#### 2.4.3.1 Size Reduction

A reduction in the size of municipal waste can be achieved through the application of one or more shredding units. The use of shredders in waste processing systems generally falls into one of three categories:

1. Primary shredding to reduce bulk density, to open bags, and to improve the efficiency of subsequent size separation systems;
2. Secondary shredding for size control and improved material handling; and
3. Tertiary shredding to improve ferrous or aluminum density or marketability.

There are four types of shredders in common use. They include the flail mill, rotary shear, horizontal hammermill, and vertical

hammermill. Each differs in the way they cut or break refuse.

Flail mills are normally primary shredding units which utilize various types of high-speed impactors to beat the refuse against a flat surface or a second rotor in a manner similar to a manual crushing device. Typical single and dual rotor flail mills are depicted in Figure 2-1.

Rotary shears are low horse-power, low-speed size reduction units which slice, tear, or twist material into smaller particle sizes. Rotary shears are reversible so that when they encounter material too tough to cut, the shears reverse and back the materials out for repeated attempts. A typical rotary shear is illustrated in Figure 2-2.

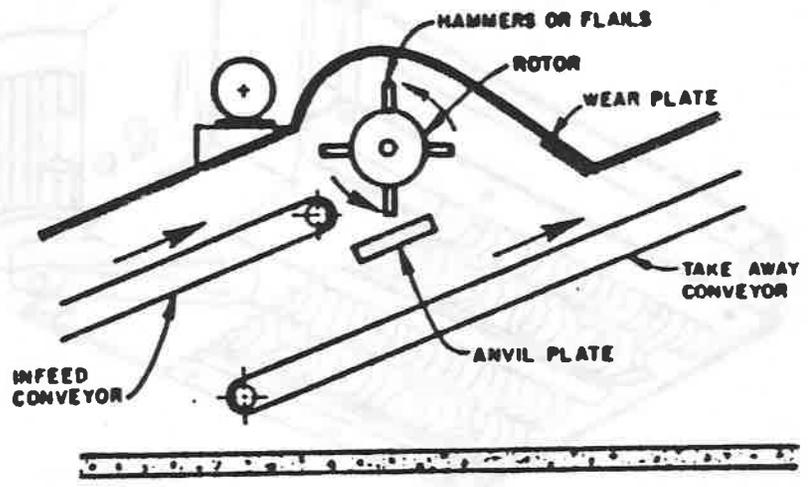
Hammermills consist of multiple, high speed, pivoted swing-hammers connected to a rotor. Refuse introduced to the hammer unit is beaten, hammered, cut, and shredded by the force and shearing action of the hammers. In the horizontal hammermill, the hammer shaft is positioned horizontally and the hammer swings in a vertical plane onto a grate bar. In the vertical hammermill, the hammer swings in a vertical plane, however, grate bars are not used. Both horizontal and vertical hammermills are used in various preprocessing stages. However, the presence of a grate bar in the horizontal device offers better size control. Figure 2-3 shows a typical horizontal and vertical hammermill arrangement.

#### 2.4.3.2 Waste Classification

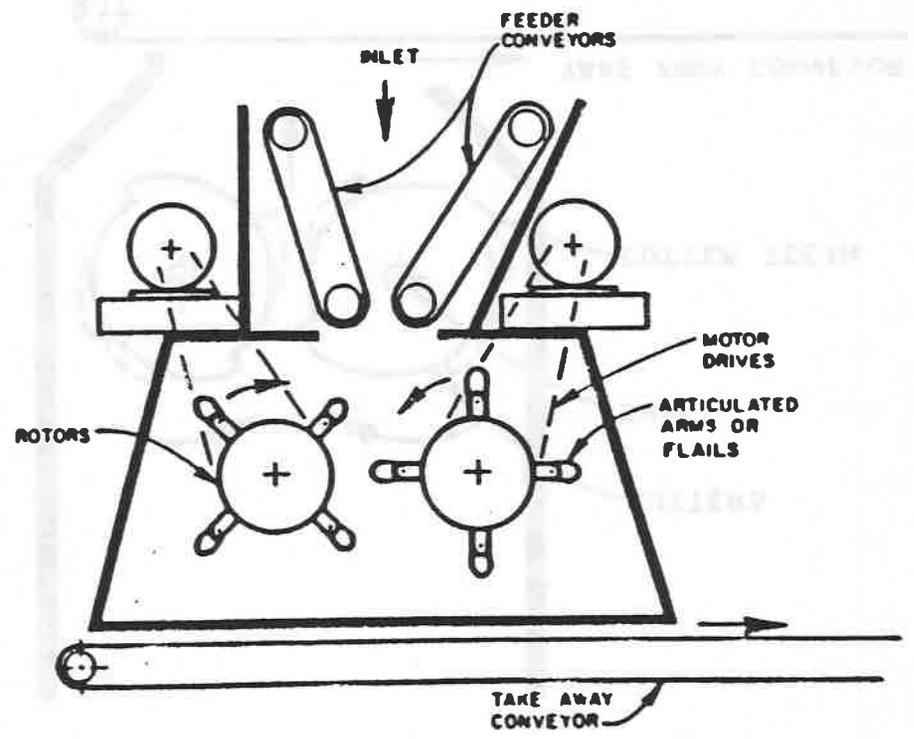
##### Rotating Screens or Trommels

A trommel is a cylindrical screen that rotates around an axis. The axis is placed at a slight incline to produce movement of the waste through the unit. This process separates the wastes through particle size differentiation. With careful selection of the

2-11



SINGLE ROTOR FLAIL



DUAL ROTOR FLAIL

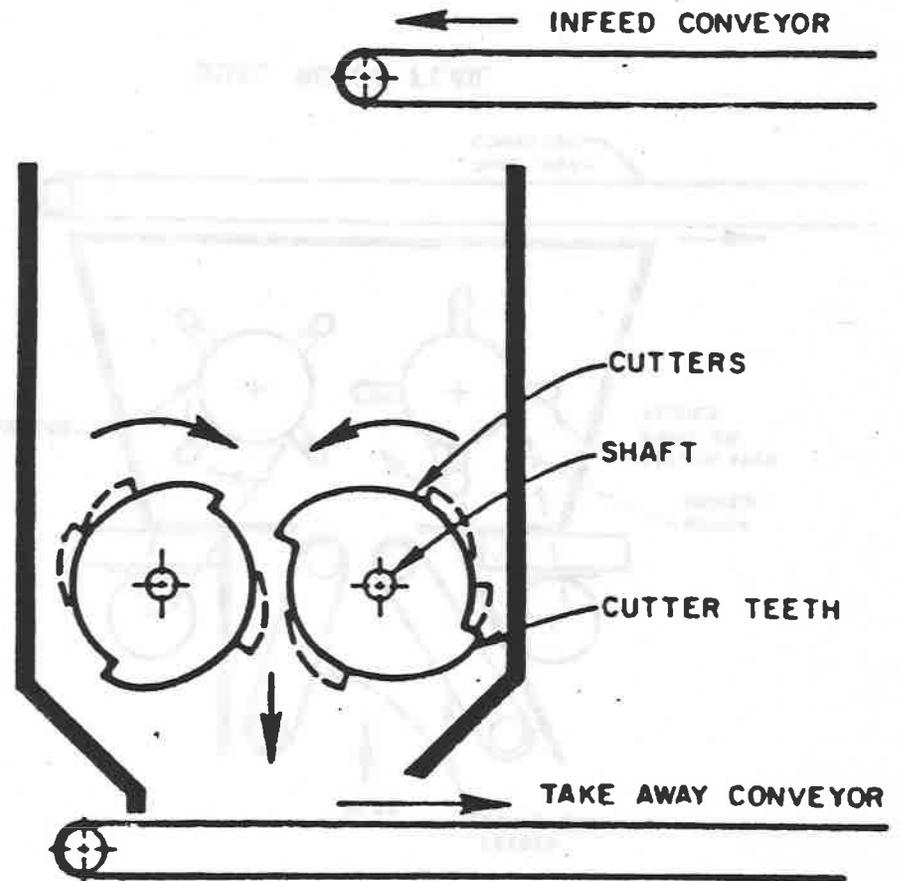
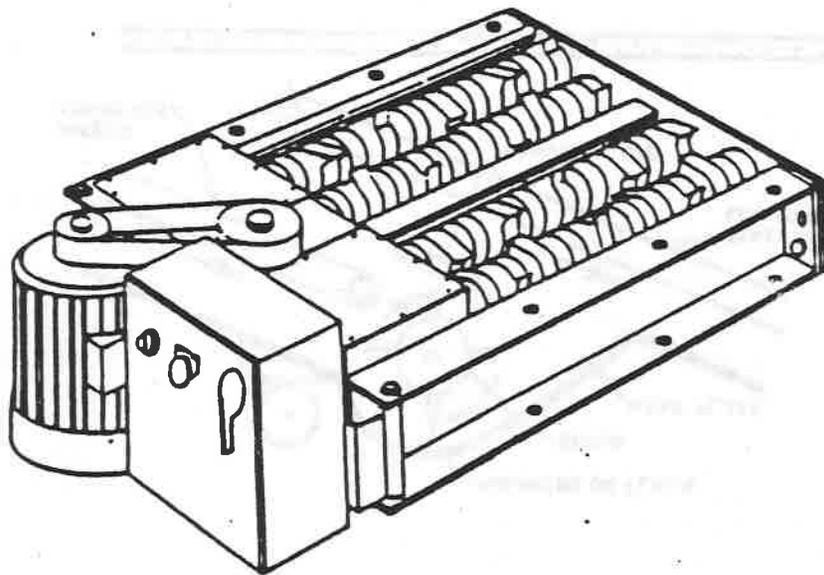
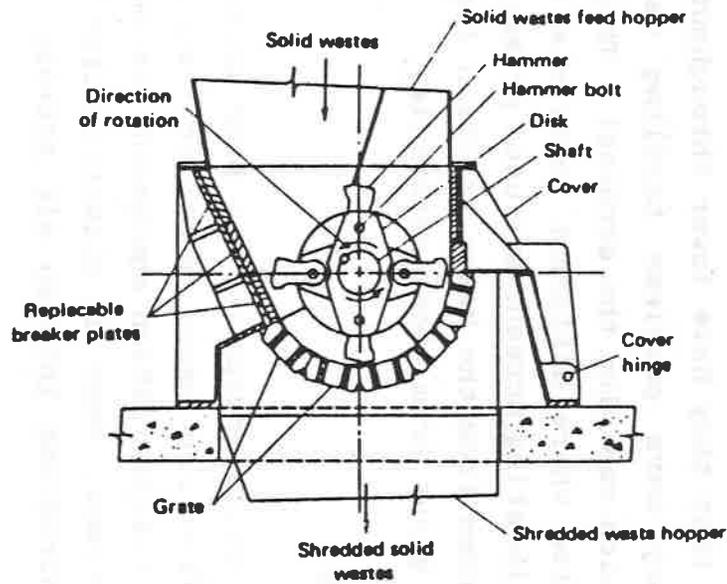
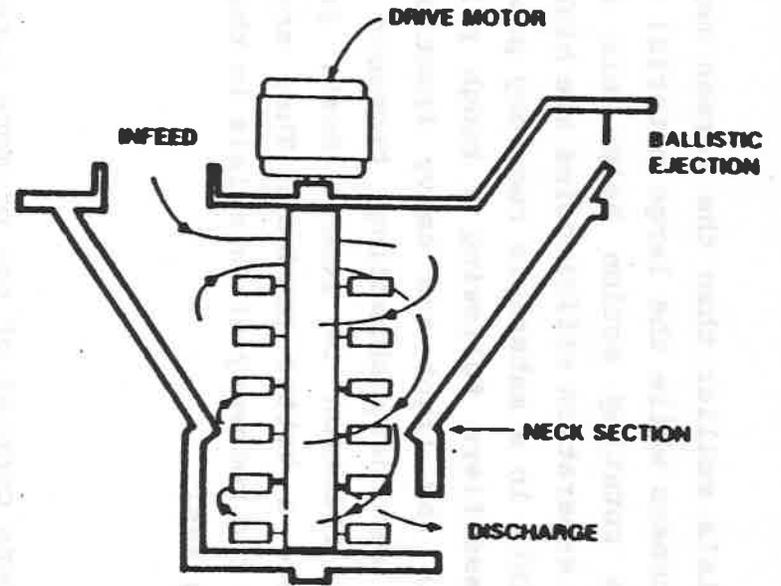


FIGURE 2-2  
ROTARY SHEAR



**HORIZONTAL SHAFT  
HAMMERMILL**



**VERTICAL SHAFT  
HAMMERMILL**

screen size, materials smaller than the screen mesh opening will drop through the screens while the large material travels through the trommel. The rotating action helps mix and tumble the wastestream so that separation efficiencies are high. Trommels can be used at many points in a materials recovery process. Trommels can be used as classifiers following a rough primary shredding process to separate the light and heavy fractions. Following classification and secondary shredding, trommels are also being used on the light fraction to remove dust, grit, and glass particles to produce a better product. They are also used as processing steps in the recovery of materials in the heavy fraction (i.e., metals and glass).

### Vibrating Screens

Vibrating screens consist of one or more screens oriented at the same angle and stacked vertically with different mesh openings. They operate in a manner similar to trommels. The advantage of vibrating screens are that they provide good separation in the smaller particle size ranges and are less expensive. Their disadvantages are that they have lower throughput capacities than trommels, and they have problems handling wastes with large particle sizes (which can plug the screens). They also have lower removal efficiencies where different materials tend to cling or stick together. Vibrating screens are used primarily to process or separate large pieces from the heavy fraction (particularly grit, dirt, and crushed glass from other materials).

### Air Classification

Air classification equipment has been used to separate the wastestream into fractions based on properties of the waste other than size alone. Classification equipment can be used in a large variety of applications. When air classification is used, shredded solid waste is introduced into an air stream. The lightweight

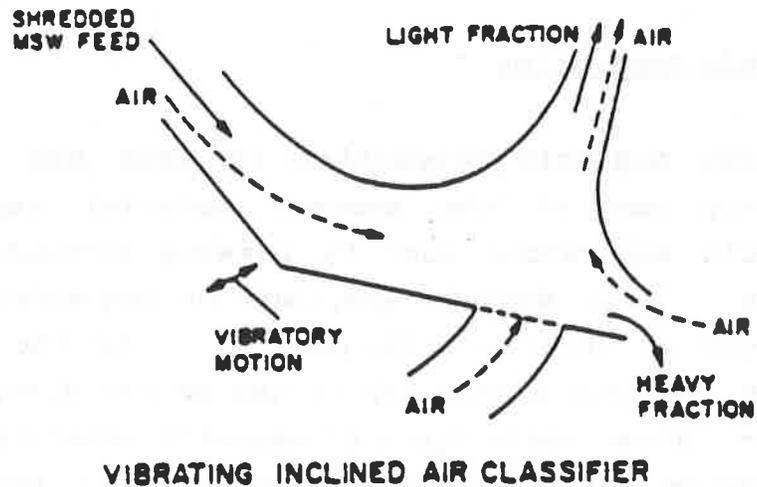
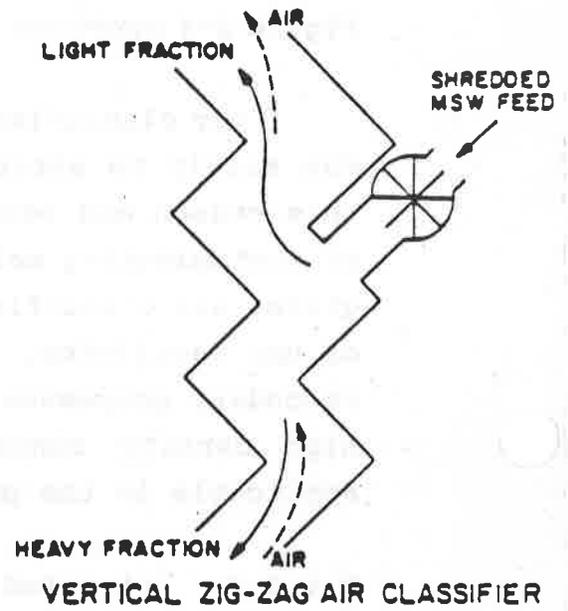
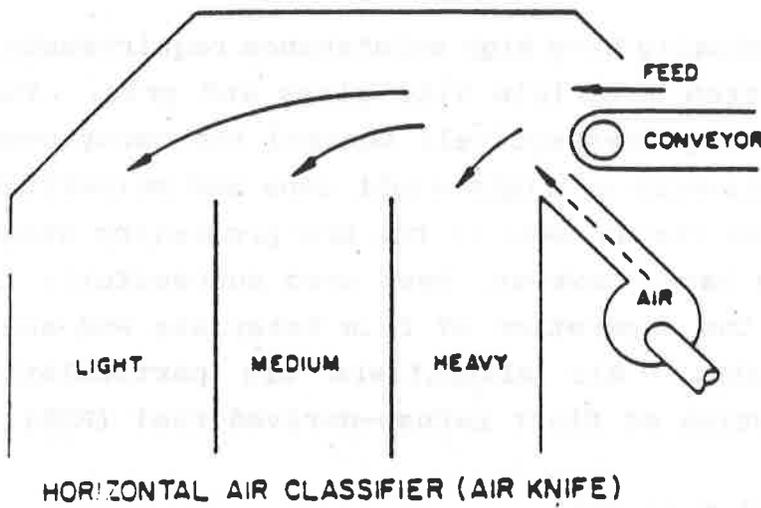
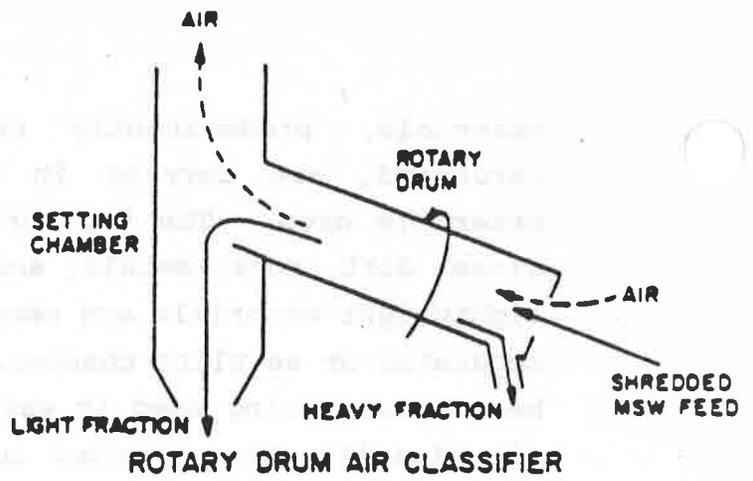
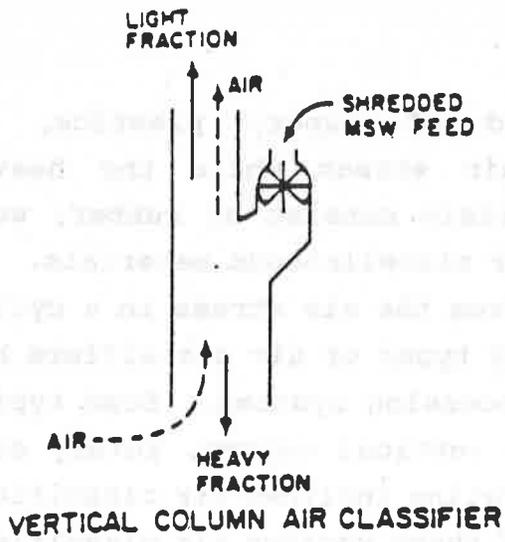
materials, predominantly composed of paper, plastics, and cardboard, are carried in the air stream while the heavier materials drop. The heavier materials consist of rubber, wood, glass, dirt, rock, metals, and other miscellaneous materials. The lightweight materials are removed from the air stream in a cyclone separator or settling chamber. Many types of air classifiers have been or are being used in waste processing systems. Some typical air classification schemes include vertical column, rotary drum, air knife, vertical zigzag, and vibrating inclined air classifiers. Figure 2-4 provides illustrations of these various air classifiers.

Air classifiers typically have high maintenance requirements, due mainly to abrasion from materials like glass and grit. For this reason and because they ineffectively control the carry-over of contaminating materials such as lightweight cans and pulverized glass, air classifiers are rarely used in the pre-processing stage of new facilities. They have, however, been used successfully in secondary processes for the separation of film materials and some high density contaminants. Air classifiers are particularly applicable in the production of fluff refuse-derived fuel (RDF).

#### 2.4.3.3 Automated Metal Recovery

##### Magnetic Separation

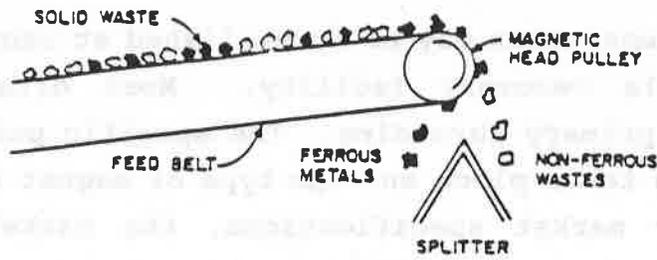
The magnetic properties of iron and steel make ferrous recovery one of the easiest material separation processes. Magnetic separators work by passing shredded solid waste by a magnet. These magnets are usually suspended over the end of a conveyer or located underneath it. As the wastes pass by the magnet, ferrous metals are picked up and diverted into a separate stream. Three basic types of magnetic separators have been used in recovering ferrous metals from shredded refuse including drum magnets, single magnet-belt separators, and multiple magnet-belt separators. These separators are depicted in Figure 2-5.



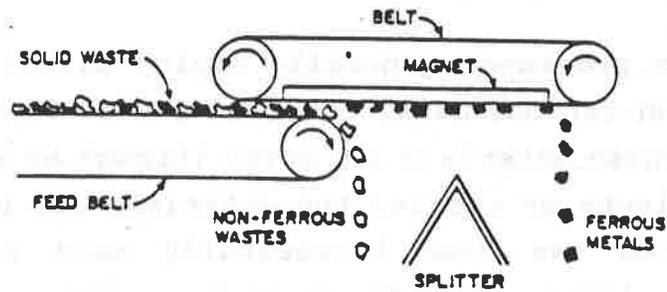
DUPAGE COUNTY SOLID WASTE MANAGEMENT PLAN

Camp Dresser & McKee Inc.

**FIGURE 2-4  
AIR CLASSIFIERS**

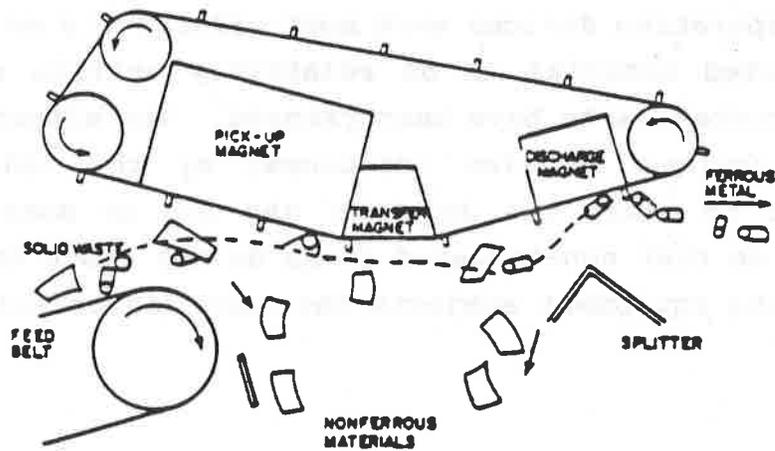


**DRUM MAGNET**



SOURCE: EPA

**SIMPLE MAGNET-BELT SEPARATOR**



SOURCE: DIMS MAGNETICS

**MULTIPLE MAGNET-BELT SEPARATOR**

DUPAGE COUNTY SOLID  
WASTE MANAGEMENT PLAN

Camp Dresser & McKee Inc.

FIGURE 2-5  
MAGNETIC SEPARATORS

Magnetic separation may be accomplished at many different points in a materials recovery facility. Most often, it is performed following primary shredding. The specific point at which magnetic separation takes place and the type of magnet used depends upon the particular market specifications, the market locations for the ferrous scrap, and requirements for other separation processes.

### Electroseparation

These processes generally employ electromagnetic properties and use non-ferrous metal conductivity to separate the metals from refuse. These materials are moved through an electromagnetic field which deflects or carries the materials out of the refuse stream. This system has been successfully used on aluminum, and is currently being investigated for other non-ferrous metals. Aluminum separators of this type are commonly referred to as eddy current separators. Electromagnetic field processes are usually preceded by classification, secondary shredding, and trommels or vibrating screens to produce the required feed material. That is, electroseparation devices work most effectively on wastes in which the targeted material is of relatively uniform size, and after certain contaminants have been removed. The effectiveness of such sorting devices is also influenced by the ability of infeed conveyors to limit the depth of the bed of materials requiring sorting, so that non-targeted items do not block the path to which the sorting equipment subjects the targeted material.

appa3-2

## SECTION 3.0 SYSTEM APPLICATIONS

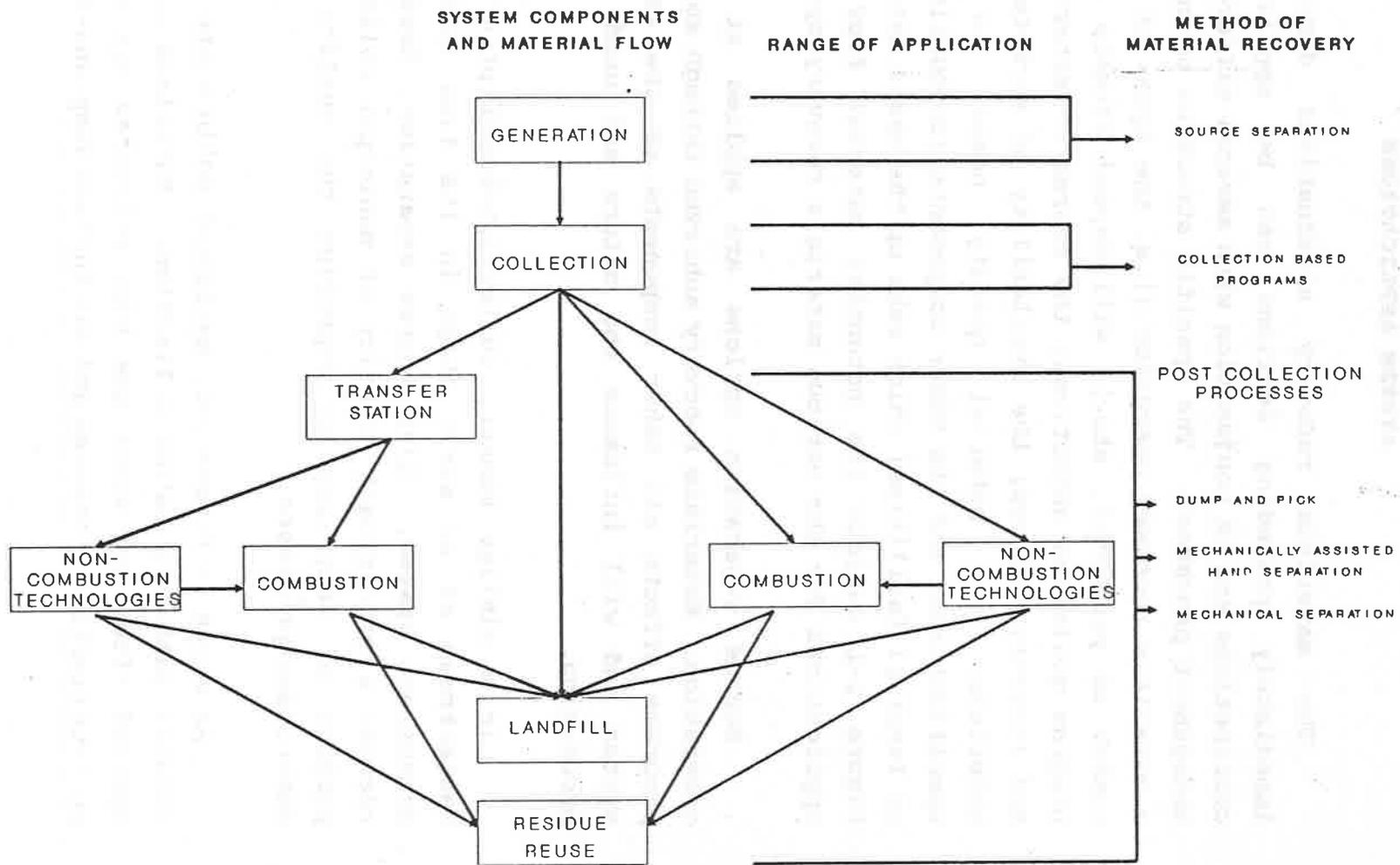
The materials recovery alternatives discussed in the immediately preceding sections can be applied in various combinations and in conjunction with several different solid waste management processes. The specific structure or configuration of a materials recovery operation (i.e. the types of equipment, the number of personnel, etc.), will depend largely on the overall program goals and objectives; the degree of materials separation and recovery desired; the availability of markets for recovered materials; the material quality needed to meet market specifications; and the other components (combustion, composting, or landfill facilities) which make up the waste management system. Figure 3-1 depicts the potential material flow and range of applications for the various materials recovery options.

Source separation options are applied at the point of generation. Materials recovery achieved through source separation programs affects all other components of the waste management system and will influence the nature and need for additional processing.

In a similar manner, collection-based programs impact the wastestream at an early stage in its flow through the waste management system. Like source separation, these programs can recover a significant quantity of municipal solid waste for the purpose of recycling or improving the quality of waste for downstream processes.

As shown in Figure 3-1, municipal solid waste can take any of several paths following collection. Materials recovery methods applied after the waste has been collected are commonly termed post-collection processes and can include dump-and-pick facilities,

**FIGURE 3-1**  
**MATERIAL RECOVERY SYSTEM ALTERNATIVES**  
**MATERIAL FLOW AND RANGE OF APPLICATION**



mechanically-assisted hand separation processes, and mechanical separation processes.

One of the most common applications of post collection materials recovery processes occurs at municipal solid waste transfer stations. Transfer stations, by design, serve an intermediate processing function. Most transfer stations accept municipal solid waste, reduce its volume through compaction, and transport it to a landfill or some other type of processing facility. The basic function of a transfer station is to process the waste in a manner which optimizes the efficiency of further transportation. Materials recovery compliments this function by further reducing the volume any remaining waste.

X-L Disposal's 400 TPD mixed waste processing facility in Crestwood, Illinois, is located at a transfer station. This facility is designed to separate refuse into five streams, including glass and grit; ferrous metals; nonferrous metals; papers; and plastics. The system includes two hand-picking stations for the separation of paper and plastics; a rotating trommel to break up bags and separate grass and grit; a series of magnets to remove ferrous metals; an eddycurrent separator to remove aluminum; and the recent addition of air classifiers and a cubing system for preparing RDF. The system occupies about 4,000 sq. ft. of a 19,000 sq. ft. transfer facility which X-L has been operating since 1981. In the three months of April, May and June, 1990, X-L claims to have processed over 29,000 tons of mixed municipal waste and to have recycled approximately 15% of this material.

In addition to being located at transfer facilities, materials recovery processes are being applied increasingly to combustion systems. These processes can be applied both before and after combustion. Post-combustion recovery systems generally target ferrous metals which are typically separated from combustion ash

using one or more of the magnetic recovery systems described above. Pre-combustion materials recovery systems can target a wider range of materials including paper, plastic, glass, ferrous, aluminum, and other metals. By removing glass, metals, grit, and other undesirable materials like household hazardous wastes, materials recovery systems can substantially improve the combustion process resulting in smoother operations and cleaner emissions.

In a similar way, materials recovery systems are used to process municipal solid waste prior to composting. Materials recovery systems are typically installed at the front end of a composting operation to remove glass, ferrous metal, aluminum and other nondegradable materials prior to actual composting in a compost reactor. Following the composting process some additional screening may occur to further improve product quality.

Resource Recycling magazine recently reviewed 10 materials recovery facilities operating in the U.S. (Resource Recycling, "Garbage In, But What Comes Out?", September 1990). The facilities examined were:

- Delaware Reclamation Plant      New Castle, DE
- Fillmore County Resource Recovery Center      Preston, MN
- Future Fuel, Inc.      Thief River Falls, MN
- Rabanco Recycling Company      Seattle, WA
- Recomp, Inc      St. Cloud, MN
- Refuse Resource Recovery Systems      Omaha, NE
- Reuter, Inc.      Eden Prairie, MN
- Sumter County      Sumterville, FL
- Wastetech, Inc.      Portland, OR
- XL Disposal Corporation      Crestwood, IL

Table 3-1 provides a summary of information for the selected facilities. The highest reported recovery rate for recyclables is 50 percent at the Wastetech facility. This operation receives selected commercial waste with a paper-rich fraction. Reportedly, loads with as little as 30 or 40 percent recoverable paper are accepted, although the tipping fee goes up as the percentage and scrap value of the recyclable paper goes down.

The Delaware Reclamation Plant, designed and operated by Raytheon Service Company for the Delaware Solid Waste Authority, is unique. The facility has a 4 percent recycling rate but the combination of co-composting and RDF products gives it a reported overall 84 percent landfill diversion rate. Co-composting involves mixing the organic fraction of solid waste with sewage sludge for composting.

Materials recovery offers benefits even within those waste management systems which do not include combustion or composting operations. Removing recyclable paper, plastic, glass, metals, and undesirable materials like household hazardous waste helps to reduce the volume of waste which requires landfilling. It can also make the remaining waste more compactable, thus saving valuable space in the landfill, and potentially adding years to its life. Removing household hazardous wastes and other undesirable materials may also help reduce the potential environmental risk associated with operating a landfill.

Materials recovery systems can play a key role in the formulation of integrated waste management systems. They can be pivotal in providing for the separation of mixed municipal waste into component parts which can then be processed in the most suitable manner through various recycling, composting, combustion, or landfill alternatives.

appa3-3

TABLE 3-1  
 PROCESSING AND RECOVERY LEVELS AT SELECTED MIXED WASTE PROCESSING FACILITIES

FACILITY	DESIGN TONS PER DAY	ACCEPTED MATERIALS (1)	PERCENT		
			RECYCLABLE MATERIALS	OTHER PRODUCTS (2)	LANDFILLED
Delaware Reclamation	1,000 (R,C) 260 sludge	R,C sludge	4	80	16
Fillmore County *	8, also 3 SS	R,C	8	N/A	N/A
Future Fuel	45	R,C	16	73	11
Rabanco *	200 100 SS	SC	N/A	N/A	N/A
Recomp *	100	R,C	5	55	40
Refuse Resource Recovery Systems *	600+	R,C	(4)	(4)	(4)
Reuter (3) *	400	R	7	38	55
Sumter County *	60	R,C	7	76	17
Wastetech *	48, also 60 SS	SC	50	0	50
XL Disposal	400	R	14	20	66

\* Indicates source separation program exists in area.

(1) R = mixed residential waste, C = mixed commercial waste,  
 SC = selected commercial waste with paper rich fraction,  
 SS = source-separated curbside materials accepted but processed with other equipment.

(2) Such as refuse-derived fuel or compost.

(3) Two-thirds of the RDF is stored because of inability to sell.

(4) The vendor is contractually obligate to process (recover) 20%  
 of the waste delivered with the goal increasing to 30 percent in yearly  
 increments of 2%.

SOURCE: Resource Recycling, September 1990

## SECTION 4.0

### PROCESS DESIGN CONSIDERATION

#### 4.1 INTRODUCTION

As discussed earlier in this Appendix, the successful application of materials recovery in an integrated solid waste management system requires a thorough evaluation of the service areas, waste characteristics, and the respective roles of other components of the overall system in processing or disposing of municipal solid waste. The design of a materials recovery process should be based on the overall waste management objectives and the specific need for materials recovery to meet those objectives.

Several different types of facilities are being considered as potential components of an integrated waste management system in DuPage County. As indicated in Appendix A-2, materials recovery through a source-separation-based recycling program is a key component of all options. By constructing intermediate processing facilities to serve the growing number of curbside recycling programs in DuPage County, and by providing related assistance and community education, the County is acting to maximize the recovery of recyclable materials from the wastestream through source separation. Through a complimentary series of commercial/industrial/institutional outreach efforts, the County intends to maximize the participation of these establishments in recycling efforts.

However, even the best designed source-separation based recycling program will not recover all of the available recyclable materials which enters the residential and commercial/industrial/institutional wastestreams. Materials recovery is limited by factors such as those governing the rate of participation and the number of people or businesses which can be realistically and economically served with programs for the

separate collection of recyclable materials. Further, some recycling programs, especially those for DuPage County multi-family residential units, may target only a portion of the available materials, leaving other recyclable materials in the wastestream. Most businesses will only recycle to the extent that the perceived benefits from recycling outweigh the cost of waste disposal.

In designing a post-collection materials recovery program to supplement a source separation program as proposed in Phase I of the County's system, careful consideration must be given to coordinating the two efforts. Conducting materials recovery at two or more points in a waste management system may result in some redundancy. However, some redundancy may be necessary to achieve materials recovery or contaminant reduction objectives. The cost of redundancy associated with achieving higher levels of materials recovery must be balanced against the overall materials recovery goals and objectives.

Materials which are not typically collected in source separation efforts are good target materials for post-collection or secondary materials recovery processing. This may include materials like mixed waste paper or other low quality grades of paper, household hazardous waste, and certain organic materials. However, the cost-effectiveness of providing collection of these materials, especially household hazardous wastes, by source separation efforts must be considered.

An assessment of the current and developing markets or alternative disposal options for materials targeted for recovery is essential. For instance, a materials recovery program accomplishes little by removing mixed waste paper. Similarly, removal of hazardous waste accomplishes nothing if alternative methods for more environmentally acceptable processing or disposal are not available. Again, the processing objective must be considered. Materials recovery is often applied as a preprocessing step for

some other type of operation employing combustion or non-combustion processes prior to landfilling of residue. The processing objective in this type of application is partly to assist in preparing an optimum feed stock for subsequent combustion, composting or other non-combustion processing (e.g., anaerobic digestion). Materials recovery in these applications may proceed under adverse market conditions even though the recovered materials may be sent to a landfill.

As discussed earlier in Section 3.0, the apparent use of materials recovery facilities prior to landfilling has been to primarily reduce the amount of waste requiring disposal. Design of a facility allowing the recovery of materials considered as undesirable for landfilling (i.e. organic solvents) may be achievable in the future and would offer obvious benefits.

In developing a materials recovery program, consideration must also be given to the particular wastestream which is targeted. For example, municipal source-separation recycling programs have tended to target residential waste more than commercial/industrial/institutional wastes. This tendency occurs because local governments are often directly involved in providing, franchising, or licensing the collection of residential wastes, but are rarely involved in similar activities for the collection of commercial, industrial and institutional wastes. However, the commercial/industrial/institutional wastestream often contains a relatively high proportion of recyclable materials, which are generally less contaminated (e.g., with food wastes) than residential wastes. Commercial/industrial/institutional MSW recycling has been driven largely by an economic incentive to reduce disposal costs. Mixed commercial waste sorting can be a viable mechanism for inducing commercial/industrial/institutional materials recovery in excess of that typically achieved through education, promotion, and the application of economic incentives.

Other issues which must be addressed in the design of a materials recovery program include: siting objectives and constraints, cost, environmental impacts, and various implementation concerns. These topics will be discussed in the following sections.

appa3-4

## SECTION 5.0

### SITING OBJECTIVES AND CONSTRAINTS

#### 5.1 INTRODUCTION

The selection of a proper site for a materials recovery operation is critical to its overall success. The specific nature of the materials recovery operation will have a significant bearing on the siting requirements which must be met.

Materials recovery operations which process mixed residential waste would under current state statutes require a permit from IEPA and, if they meet the definition of a "Regional Pollution Control Facility", would require local siting approval in accordance with Section 39.2 of the Illinois Environmental Protection Act. This process is often referred to as the SB-172 approval process. For more information on this siting approval process, refer to Section 2.0 of Appendix A-1.

In most cases, siting considerations for a materials recovery facility, like any other waste transfer, processing or disposal facility, extend beyond the statutory requirements of the Illinois Environmental Protection Act. Examples of other issues which must be considered include:

1. Land requirements and availability;
2. Transportation and market accessibility;
3. Proximity to utilities;
4. Site subsurface conditions; and
5. Economic and environmental impacts to the surrounding affected community(ies).

These issues are briefly examined below.

## 5.2 MINIMUM STATE REQUIREMENTS

In August 1990 the Illinois Pollution Control Board promulgated amendments to its landfill regulations (Proceeding R88-7, August 17, 1990). The regulations deal with the disposal of municipal solid waste (including special wastes) at sanitary landfill facilities in Illinois. The regulations set the following minimum location standards for the siting of new landfills in Illinois (ref. Section 811.102):

1. The facility shall meet all requirements under the Wild and Scenic Rivers Act (16 U.S.C. 1271 et seq.).
2. The facility shall not restrict the flow of a 100-year flood, result in washout of solid waste from the 100-year flood, or reduce the temporary water storage capacity of the 100-year floodplain, unless measures are undertaken to provide alternative storage capacity, such as lagoons, holding tanks, or provision of drainage around structures at the facility.
3. The facility shall not be located in areas where it may pose a threat of harm or destruction to the features for which an irreplaceable historic, or archaeological site was listed pursuant to the National Historic Preservation Act (16 U.S.C. 470 et seq.) or the Illinois Historic Preservation Act (Ill. Rev. Stat. 1989, ch. 127, par. 133d1 et seq.) for which a Natural Landmark was designated by the National Park Service or the Illinois State Historic Preservation Officer, or for which a natural area was designated as a Dedicated Illinois Nature Preserve pursuant to the Illinois Natural Areas Preservation Act (Ill. Rev. Stat. 1989, ch. 105 par. 701 et seq.).
4. The facility shall not be located in areas where it may jeopardize the continued existence of any designated endangered species, result in the destruction or adverse modification of the critical habitat listed for such species, or cause or contribute to the taking of any endangered or threatened species of plant, fish or wildlife listed pursuant to the Endangered Species Act 16 U.S.C. 1531 et seq., or the Illinois Endangered Species Protection Act (Ill. Rev. Stat. 1989, ch. 8, par. 331 et seq.).
5. The facility shall not cause a violation of Section 404 of the Clean Water Act (33 U.S.C. 1344).

6. The facility shall not cause a violation of any requirements implementing an area-wide or statewide water quality management plan for nonpoint source pollution that has been approved under Section 208 of the Clean Water Act (33 U.S.C. 1288).

These location standards should be considered in any consideration of sites for materials recovery facilities. Also, any State requirements specifically addressing waste processing facilities should be considered at the time such facility site(s) is (are) considered. For instance, at the current time, a materials recovery facility could be classified as a waste transfer facility (unless located at an existing waste facility) and, therefore, would require minimum setback requirements from residences under State stature. However, in 1990 the separate categorization of waste "processing facilities" was discussed by a State Legislation task force looking into waste facility siting issues. Separate State regulations may apply to these facilities in the future.

### 5.3 LAND REQUIREMENTS AND AVAILABILITY

The amount of land required for a materials recovery facility will depend on the type of process used, the quantity of materials to be processed, site topography, and the location of the site in relation to adjacent land uses. The need to incorporate buffer area into the site decreases as the compatibility with surrounding land uses increase. However, it can be generally assumed that sites with expanded buffer capabilities are preferable to those without such capabilities. Typically, a centralized processing facility for DuPage County could be expected to occupy anywhere from 5 to 20 acres, depending on the facility's specific requirements and its compatibility with neighboring properties.

### 5.4 TRANSPORTATION AND MARKET ACCESSIBILITY

In addition to considering the impact which a materials

recovery facility (specifically intermediate processing facilities, not drop-off centers) will have on surrounding traffic flow, some consideration should be given to locating a materials recovery facility as close as possible to major transportation routes serving potential markets for the recovered materials. Choosing a site which is near interstate highway interchanges and, if possible, a railroad line can have a considerable influence on the facility's accessibility to potential markets, and the cost to transport materials to those markets.

#### 5.5 PROXIMITY TO UTILITIES

The utilities required for a materials recovery facility include telephone, sewer, electric, water, and possibly natural gas. Selection of a site where these utilities are readily available is preferred, as the cost of extending utilities to a site can be substantial.

#### 5.6 SITE SUBSURFACE CONDITIONS

Most materials recovery facilities, particularly those applied in the processing of mixed residential or commercial waste, will require relatively large buildings (e.g., often 30,000 square feet or more). The equipment and structures are usually heavy, requiring stable soils for foundations. Soils unable to bear these process buildings and heavy process equipment loads would require more expensive foundations. Such conditions, could preclude an otherwise attractive site from consideration because of the expense involved in the construction of an adequate foundation.

Most materials recovery facilities include a tipping floor but do not generally include a storage pit. This simplifies the construction process and eliminates a number of potential problems. However, where storage pits are used, as in some applications where

material recovery is employed prior to combustion, high groundwater or shallow bedrock could also complicate construction of a materials recovery facility.

#### 5.7 ECONOMIC AND ENVIRONMENTAL IMPACTS

These two considerations are often dealt with on a more subjective rather than quantitative basis in overall consideration. The considerations already listed deal with economic and environmental impacts but often an overall consideration of subjective selection is applied when multiple sites are similar in relative impacts.

#### 5.8 SUMMARY

The sections above describe conditions which should be considered when attempting to locate a potential site(s) for a materials recovery facility. As progress proceeds on site consideration, additional restrictions as considerations may become apparent but the above considerations can be regarded as setting the baseline for evaluation of sites.

appa3-5

**SECTION 6.0**  
**ENVIRONMENTAL CONCERNS**

**6.1 FACILITY IMPACTS**

All materials recovery programs and facilities, regardless of type, present the potential for locally negative impacts on the environment, even though the net broader impact on the environment may be positive. For example, curbside collection and drop-off recycling programs may produce locally higher air emissions because of the collection trucks or automobile trips needed to transport materials to a recycling facility. However, on a broader basis, these impacts would need to be compared with emissions reductions resulting from decreased shipping requirements of virgin materials in order to compare the relative advantages of recycling. Residential drop-off sites or storage areas for recyclable materials also present the potential for locally undesirable environmental impacts associated with litter generation, reduced aesthetics associated with poor housekeeping, traffic congestion, dust, etc. The potential environmental impacts associated with a materials recovery operation will vary with the size of the facility or program and the types of processes involved.

A mixed municipal solid waste processing operation can generally be classified as an industrial activity. It generates truck traffic; can potentially be a source of noise, fugitive dust, and odors; and can cause visual impacts to the surrounding community. Measures which can be taken to control the potential environmental impacts resulting from these types of processes include controlling the length of time which putrescible waste or separated contaminants are allowed to remain in the facility both before and after processing; requiring the application of appropriate dust control measures such as the installation of filters in buildings; and reducing traffic-generated dust by paving areas which will receive heavy truck traffic. Noise and aesthetic

concerns can both be addressed through appropriate design of buildings and site landscaping features.

Despite the control measures which can be taken, it is practically impossible to avoid all potential impacts to the environment. For this reason, a facility is most appropriately placed within an area which is classified for industrial or specific solid waste use, or is otherwise appropriately buffered from nearby incompatible land uses. For instance, an area which is surrounded by agricultural land offering significant buffering from residential areas may be adequate. Reviewing land use as a site evaluation criterion indirectly provides a mechanism for considering other siting issues such as noise, aesthetics, and other environmental impacts. A site which rates poorly with regard to zoning and land use would, in all probability, require special attention for such issues as noise and aesthetics due to the identified conflicting land uses.

## 6.2 RESIDUE MANAGEMENT

During the processing of wastes, waste materials are separated into various categories. Some of these materials are sold to material markets and others may be used as feedstocks for subsequent combustion or non-combustion processing prior to landfilling. There also are materials which remain after processing and which may be unmarketable to material buyers; undesirable components for feedstock materials (e.g., plastics separated from compost feedstock); or have been separated from incoming waste materials because of environmental concerns (e.g., batteries or used oil) from mixed wastes. In planning for waste processing programs and facilities, it is essential that the environmental, legal, and economic considerations associated with the storage, transportation, and disposal of these residue products be properly addressed.

At a recycling facility (e.g., the IPFs), the disposal of residues can be expensive, reducing the net revenues produced by the facility, and can negatively impact the overall material recovery level that is actually achieved. However, the disposal of residue materials is even more challenging when those materials are actually or potentially hazardous, such as contaminants picked from mixed wastes. For example, it may be desirable to pick such household hazardous wastes as batteries, paints, solvents, pesticides and herbicides from mixed wastes destined for landfills. Although the sorting process removes these materials from the mixed wastes, a stream of concentrated contaminants is created, typically requiring disposal of at least some of the materials as hazardous wastes. Accordingly, proper means must be provided for storing, transporting and disposing of any residues classified as hazardous waste. The costs of such requirements must be anticipated. The liability of the owner and/or operator of the facility for the subsequent handling and disposal of such materials should also be thoroughly evaluated.

For recycling facilities, it is often possible through facility design and operation or through market development to reduce the amount of residues produced by the plant. For example, much of the residue produced by a sorting facility for commingled recyclables is usually broken pieces of glass which are too small for laborers to sort by color. Equipment can be designed to minimize glass breakage prior to sorting. As an alternative, efforts can be made to develop uses for this material ( e.g., as an aggregate substitute in asphalt pavement), thereby transforming a residue into a marketable product.

appa3-6

## SECTION 7.0

### COST

#### 7.1 INTRODUCTION

The cost of a materials recovery facility will vary greatly with the type of process involved. Project specific factors such as the specific type and quality of equipment used, size and type of buildings utilized, site purchase and development costs, ownership and financing methods, etc. will all affect the overall cost of a materials recovery process. The cost for curbside collection or drop-off programs can range from less than \$20/ton to over \$120/ton of material collected depending on many factors chiefly including the cost for the hauling company, the cost of processing for markets and the local market conditions. The cost for an operation like a mixed waste processing facility can also vary considerably but chief considerations include the cost for processing, local market conditions, and the local cost for waste disposal.

Table 7-1 provides a summary of the stated construction costs for the mixed waste processing facilities which were described in Section 3.0. The capital costs of these facilities ranges from \$5,000 to nearly \$73,000 per design ton of processing capacity. The Resource Recycling article concludes that a combined approach to mixed waste processing using pickers and mechanical devices can keep the construction costs in the range of \$30,000 to \$50,000 per installed ton of daily processing capacity. Cost data for materials recovery facilities is extremely limited. It may also not be comparable where available or even relevant to local conditions. Therefore, the cost information presented here provides only a general summary of costs for these types of facilities.

The capital cost of a facility (including financing costs),

TABLE 7-1  
SITE SIZE AND COSTS FOR SELECTED MIXED WASTE PROCESSING FACILITIES

FACILITY	DESIGN TONS PER DAY (1)	SITE AREA (ACRES)	\$ CAPITAL COST (2)	\$ OPERATING COST (3)	TIPPING FEE (\$)
Delaware Reclamation	1,000 (R,C) 260 sludge	25	76.9	51.21	45.17
Fillmore County *	8, also 3 SS	12	0.8	5	30 or 70
Future Fuel	45	12	1.5	35-45	45
Rabanco *	200	5	8.7	N/A	N/A
Recomp *	100 SS 100	7	6+	N/A	52
Refuse Resource Recovery Systems *	600+	5.5	3	N/A	8.70-13.65
Reuter (3) *	400	11	20	N/A	92
Sumter County *	60	7	2.5	18	35
Wastetech *	48, also 60 SS	6.5	1.2	N/A	48-55
XL Disposal	400	5	4	N/A	20, 7 to ship

\* Indicates source separation program exists in area.

- All costs are presented in dollars per ton.

(1) R = mixed residential waste, C = mixed commercial waste,  
SS = source-separated curbside materials accepted but processed with other equipment.

(2) In millions of dollars.

(3) Does not include debt service.

SOURCE: Resource Recycling, September 1990

together with the operating costs, are typically reflected in the tipping fee which is charged to deliver waste to the facility. The tipping fee does not necessarily reflect the true total costs of operation because of the varied manner in which these fees are applied at solid waste management facilities. However, tipping fees can be a reasonable indicator of relative costs among facilities. Table 7-1 provides a summary of tipping fees at the referenced facilities as well as operating costs. Tipping fees usually include the costs of any subsequent processing or disposal of MSW or residue remaining after material recovery.

appa3-7

**SECTION 8.0**  
**IMPLEMENTATION**

The implementation of a project providing materials recovery by mixed waste processing is dependent upon the final disposal option(s) selected by the County. However, the provision of materials recovery can proceed in a phased manner in order to provide processing capability which meets the goals of materials recovery as discussed in this Appendix while meeting the processing standards for the final disposal site. The key consideration for this type of project is flexibility. The facility must be sufficiently flexible in design to respond to changes in recovered materials markets as well as changes in the requirements for processing prior to disposal. Obviously, the better defined the total waste management system is, the better the role of materials recovery by mixed waste processing can be determined but the lack of a clearly defined waste management system for disposal should not in itself preclude the implementation of a materials recovery facility.

An important factor in determining the placement of mixed waste processing facilities for materials recovery is the location of waste disposal facilities. For instance, if disposal will be provided at facilities located within the county, it is probably most logical to provide the waste processing facilities at the point of disposal. In Resolutions 90-202 and 90-203 (see Appendix A-4 for copies), which support not closing either Mallard Lake or Greene Valley Landfills prior to their reaching IEPA-permitted capacities, the Forest Preserve District has recognized the advantages of waste processing by assuming that waste processing will be provided in conjunction with future operations at the two sites. However, if in-county disposal options were not available for an extended period of time, then providing waste processing facilities at a transfer station would be logical. This scenario is discussed in Appendix A-4 in the Waste Transfer sections.

Therefore, the site location of any proposed waste processing facility should be considered within the context of future disposal site location.

The requirements for siting and permitting of a mixed waste processing facility are currently in a state of flux. Currently, the facility would apparently qualify as a Regional Pollution Control Facility as defined by SB-172 because it would either be treating or transferring waste and would therefore require local siting approval. However, discussions are underway at the State legislative level to exclude such facilities from the definition of a Regional Pollution Control Facility because the facility's primary purpose would be to recover recyclable materials (or reduce the apparent toxicity of remaining waste). It is unclear what level of permitting would be required for the facility but it can be expected that an IEPA permit for operation would most likely be required. Note that an IEPA permit for the operation of transfer stations is not specifically required at this time by State regulations. Similarly, a permit is not specifically required for recycling facilities either. If such a facility is located at an existing waste disposal (or other permitted waste facility) it is expected that a supplemental permit, issued by the IEPA, for the operation of the facility would be required but local siting approval would not be required because the site is already a Regional Pollution Control Facility.

The detailed design period for such a facility is dependent on the scope of the facility but could be expected to require a minimum of six months. Bidding and construction would be expected to require 24 to 30 months resulting in total project completion schedule 2.5 to 3 years. This amount of time represents the expected time required for project implementation after selection of a site and approval by the local siting authority if required. Allotment of time for these factors would substantially increase the expected implementation timeline. appa3-8

**SECTION 9.0**  
**RECOMMENDATIONS**

**9.1 RECOMMENDATIONS**

This Appendix has discussed the application of various materials recovery options and where the various options can be placed in the waste collection and disposal network. Appendix A-2 discussed the implementation of materials recovery programs at the level of the consumer (point of generation) or preceding the consumer which collectively may be termed as "waste reduction." For the purposes of Plan-1990, materials recovery at this stage is defined as Phase I for the County's comprehensive waste management program and is aimed at the individual generators of waste, concentrating on the separation of recyclable materials prior to commingling with other waste.

Although the implementation of Phase I will have a substantial impact on reducing the overall waste quantity to be disposed, it must be recognized that further reduction in the wastestream is possible by the use of post-consumer mixed waste processing. There are several reasons for this statement including:

1. Not all individuals will participate in the separation of materials at the source;
2. Even those individuals that participate in source separation programs regularly will not recycle all materials that are recyclable 100 percent of the time;
3. The coordinated and convenient service to multi-family dwellings in the county is not and will probably not be at the same level as that for single-family dwellings. The recovery rate from this faction of waste generators can be expected to be lower with significant quantities of recoverable material remaining in this component of the wastestream; and
4. The relative recovery rate from the commercial/industrial/institutional faction of waste generators can fairly be expected to lag in

implementation with significant quantities of recoverable materials remaining in this component of the wastestream.

The advantages for the implementation of materials recovery processes which target the additional recovery of recyclable materials from the mixed wastestream are evident when viewed as supportive to source separation (Phase I) efforts. This level of additional waste reduction is proposed as Phase II of the County's comprehensive waste management system. It is recommended that the County pursue implementation of a system which provides for materials recovery from the mixed wastestream by the use of waste processing technology. Specific recommendations for action include the following:

1. A siting study should be conducted to determine possible sites and select a site or sites. The siting study should consider the site criteria described in Section 5.0 along with more specific criteria which may be developed at the time. The evaluation of sites should consider the availability of local waste disposal sites including the two existing landfills.
2. The desired performance criteria for the processing facility should be determined. In order to fairly evaluate vendor capabilities, the desired processing capabilities of the system should be defined. The principal goal for the facilities should be the recovery of recyclable materials. In addition, the ultimate goal should be to minimize the volume for final processing or disposal as described in Appendix A-4. The capability to remove materials in order to reduce the apparent toxicity of the processed waste should also be evaluated. Additionally, the delivery standards for the disposal facility should be incorporated into the performance criteria to the greatest extent possible. A minimum goal of an additional reduction in the wastestream of 10 percent should be sought as a result of mixed waste processing. Future flexibility in the design of the system should be sought in order to be responsive to shifting materials market conditions and changes in final disposal facilities.
3. A survey of commercially viable technologies and vendors proposed to meet the performance criteria should be performed. An effective way to perform this evaluation is to issue a request for letters of interest from firms interested in providing such facilities to the County and

through a series of interviews determining the relative capabilities of interested firms. This process can be used to develop a shortlist of vendors which the County views as capable to perform the desired services and qualified to submit bids for a project.

4. The County should consider implementing a system to direct the flow of waste to the designated materials recovery facility(ies). The implementation of materials recovery by mixed waste processing can be expected to represent a higher system cost than comparative disposal options which may be locally available and which do not employ materials recovery by mixed waste processing. For example, it is likely that in the short-term it would be cheaper for waste haulers to dispose of waste at surrounding landfills where waste processing is not required.

In order for a project developer to avoid building a facility which is not used because of this higher standard of treatment imposed by the County and, consequently, cost, it can be expected that any bidder for the provision of such a facility would require the County to guarantee either a minimum delivered waste quantity or payment in lieu of waste delivery. Such requirements are referred to by the waste industry as "put or pay" guarantees and provide the financial guarantee to the facility developers that they will recoup their costs. A common way that government provides this guarantee to private industry is through the imposition of waste flow control provisions which mandate the flow of waste generated within the governmental jurisdiction to designated facilities.

5. The County should bid the provision of the defined materials recovery facility(ies) on a full service basis. Using this procurement approach the County can select a project developer which can design, build and operate the facility for a set cost (or series of costs). Under this method of selection, the project developer assumes responsibility for the design, construction and operation of the facility.

Recommendations made above regarding the bidding for the provision of facilities may not be required if the facilities are provided by the current landfill operators as a result of negotiations for the extension of operating contracts by the Forest Preserve District. This possible action will require further discussion as the continuing role of the two existing landfills in

the County's long-term solid waste management system is defined.

## 9.2 EXPECTED EFFECTS OF MATERIALS RECOVERY BY WASTE PROCESSING (PHASE III) ACTIVITIES ON DISPOSAL CAPACITY

The activities discussed in this Appendix and defined as Phase II Activities under the County's proposed system are expected to reduce the wastestream remaining after Phase I activities by a minimum of 10 percent. In Appendix A-2 a summary of the expected effects of waste reduction, recycling and diversion activities on disposal capacity was presented (refer to Section 5.4 of Appendix A-2). The implementation of Phase I activities was shown to have the effect of prolonging the life of existing disposal capacity at the two landfills, Mallard Lake and Greene Valley.

Table 9-1 shows the effect of Phase II activities on remaining landfill capacities. The table assumes that the Phase II materials recovery process would be placed on-line by 1996. As explained in Appendix A-2, implementation of Phase I activities will allow the reduction of DuPage waste to a level below the minimum quantities allowed to be disposed in the landfills by the November 28, 1990 amendments to the operating contracts. In Table 5-2 the guaranteed minimum tonnage of 937,500 tons per year has been placed in the table for years 1993 through 2006. As mentioned in Appendix A-2, in the future the Forest Preserve District should consider renegotiating this contracted minimum amount. As reported in Appendix A-1, the estimated remaining capacity at the two landfills is 63,308,758 cubic yards. Therefore, implementation of Phases I and II would allow the two sites to meet the disposal needs for the county through the year 2012.

TABLE 9-1  
EFFECTS OF PHASES I AND II ON LANDFILL CAPACITY

YEAR	TONS PER YEAR AFTER PHASE I	YARDS PER YEAR AFTER PHASE I	TONS PER YEAR AFTER PHASE II	YARDS PER YEAR AFTER PHASE II	CUMULATIVE YARDS AFTER PHASE II
*****	*****	*****	*****	*****	*****
1990	992,281	2,976,842	992,281	2,976,842	2,976,842
1991	971,030	2,913,089	971,030	2,913,089	5,889,931
1992	948,531	2,845,592	948,531	2,845,592	8,735,523
1993	937,500	2,812,500	937,500	2,812,500	11,548,023
1994	937,500	2,812,500	937,500	2,812,500	14,360,523
1995	937,500	2,812,500	937,500	2,812,500	17,173,023
1996	937,500	2,812,500	937,500	2,812,500	19,985,523
1997	937,500	2,812,500	937,500	2,812,500	22,798,023
1998	937,500	2,812,500	937,500	2,812,500	25,610,523
1999	937,500	2,812,500	937,500	2,812,500	28,423,023
2000	948,952	2,846,857	937,500	2,812,500	31,235,523
2001	961,833	2,885,500	937,500	2,812,500	34,048,023
2002	974,901	2,924,702	937,500	2,812,500	36,860,523
2003	988,155	2,964,466	937,500	2,812,500	39,673,023
2004	1,001,601	3,004,803	937,500	2,812,500	42,485,523
2005	1,015,239	3,045,717	937,500	2,812,500	45,298,023
2006	1,031,378	3,094,134	937,500	2,812,500	48,110,523
2007	1,047,761	3,143,283	942,985	2,828,955	50,939,478
2008	1,064,392	3,193,175	957,952	2,873,857	53,813,335
2009	1,081,273	3,243,818	973,145	2,919,436	56,732,771
2010	1,098,408	3,295,223	988,567	2,965,701	59,698,472
2011	870,183	2,610,549	783,165	2,349,495	62,047,967
2012	870,183	2,610,549	783,165	2,349,495	64,397,461

As an additional comment on Table 9-1 note that construction/demolition waste is assumed to cease entirely in the year 2010 in this scenario. In Appendix A-1 this component of the wastestream, was held constant throughout the planning period.

The major illustration provided by Table 9-1 is that the implementation of Phase II can help to assure that the disposal needs of the county during the 20 year planning period can be met by existing facilities.

appa3-9

---

**APPENDIX 8-C**

**DUPAGE COUNTY SWMP  
VOLUME 3**

---

February, 1991

# DuPage County

## *Solid Waste Management Plan*

*Volume 3 of 4*

*Appendix A-4*

Prepared For:  
DuPage County Solid Waste  
Planning Committee

Prepared By:  
Department of Environmental Concerns  
Division of Solid Waste



DuPAGE  
COUNTY  
RECYCLING  
PROGRAM

DUPAGE COUNTY SOLID  
WASTE MANAGEMENT PLAN

APPENDIX A-4  
FINAL WASTE PROCESSING/DISPOSAL OPTIONS  
(PHASE III WASTE MANAGEMENT)

INTRODUCTION.....i-1  
    Contents.....i-1  
    Purpose.....i-1

WASTE TRANSFER

1.0 INTRODUCTION.....1-1  
    1.1 Contents.....1-1  
    1.2 Purpose.....1-1  
2.0 OVERVIEW OF SYSTEMS.....2-1  
    2.1 Introduction.....2-1  
    2.2 Transfer Technologies.....2-2  
        2.2.1 Stationary Compactors.....2-2  
        2.2.2 Open Top Trailers.....2-3  
        2.2.3 Balers For Transfer.....2-4  
        2.2.4 "Other" Transfer Technologies.....2-5  
        2.2.5 Summary Of Transfer Technologies.....2-5  
    2.3 Transport Systems.....2-9  
        2.3.1 Truck Transport.....2-9  
        2.3.2 Rail Transport.....2-10  
3.0 ENVIRONMENTAL CONSIDERATIONS.....3-1  
    3.1 Introduction.....3-1  
    3.2 Water Quality.....3-1  
    3.3 Odor.....3-2  
    3.4 Noise.....3-2  
    3.5 Traffic.....3-3  
    3.6 Aesthetics And Land Use Compatibility.....3-4  
4.0 COSTS.....4-1

4.1	Costs At Transfer Station.....	4-1
4.1.1	Capital Costs.....	4-1
4.1.2	Costs To Operate.....	4-2
4.2	Cost To Transport.....	4-3
4.3	Summary.....	4-3
5.0	SITING CONSIDERATIONS.....	5-1
5.1	Introduction.....	5-1
5.2	Land Requirements.....	5-2
5.3	Transportation Accessibility.....	5-3
5.4	Proximity To Utilities.....	5-3
5.5	Site Subsurface Conditions.....	5-3
6.0	IMPLEMENTATION.....	6-1
7.0	RECOMMENDATIONS.....	7-1

**COMBUSTION**

8.0	INTRODUCTION.....	8-1
8.1	Purpose.....	8-1
8.2	Background.....	8-1
8.3	Contents.....	8-3
9.0	MASS FIRING.....	9-1
9.1	Overview.....	9-1
9.2	Field-Erected Units.....	9-1
9.2.1	Descriptions Of Methods.....	9-2
9.2.2	Operational Experience.....	9-5
9.3	Modular Combustion Units.....	9-6
9.3.1	Description Of Methods.....	9-6
9.3.2	Operational Experience.....	9-8
9.4	Mass-Firing With Pre-Processing.....	9-9
10.0	PREPARED FUEL.....	10-1

10.1	Overview.....	10-1
10.2	Processing Methods.....	10-1
10.2.1	Overview.....	10-1
10.2.2	Dry Processing.....	10-3
10.2.3	Wet Processing.....	10-6
10.2.4	Densified Fuel.....	10-6
10.2.5	Operational Experience.....	10-8
10.3	Combustion Methods.....	10-9
10.3.1	Overview.....	10-9
10.3.2	Descriptions Of Methods.....	10-10
10.3.2.1	Spreader-Stoker Firing.....	10-10
10.3.2.2	Suspension Firing.....	10-10
10.3.2.3	Fluidized Bed Combustion.....	10-13
10.3.3	Operational Experience.....	10-15
11.0	ENVIRONMENTAL CONSIDERATIONS.....	11-1
11.1	Introduction.....	11-1
11.2	Air Quality.....	11-1
11.2.1	Overview.....	11-1
11.2.2	Regulatory Review.....	11-1
11.2.2.1	Ambient Air Quality Standards.....	11-2
11.2.2.2	Prevention Of Significant Deterioration Requirements.....	11-6
11.2.2.3	Nonattainment Area Regulations.....	11-8
11.2.2.4	New Source Performance Standards.....	11-9
11.2.2.5	National Emissions Standards For Hazardous Air Pollutants.....	11-11
11.2.3	Air Pollutant Emissions.....	11-12
11.2.4	Air Pollution Control Technologies.....	11-14
11.2.4.1	Particulate Control.....	11-15
11.2.4.2	Sulfur Dioxide And Acid Gas Control.....	11-19
11.2.4.3	Organic Emissions Control.....	11-21
11.2.4.4	Control Of Nitrogen Oxides.....	11-26
11.2.4.5	Heavy Metal Control.....	11-27
11.2.4.6	Multipollutant Control Strategy And Likely Best Available Control Technology Requirements.....	11-28
11.3	Water Quality.....	11-29
11.4	Residue Management.....	11-31
11.4.1	Overview.....	11-31

11.4.2	Physical And Chemical Composition.....	11-32
11.4.3	Environmental And Regulatory Disposal Concerns.....	11-33
11.5	Odor.....	11-38
11.6	Noise.....	11-39
11.7	Traffic.....	11-40
11.8	Land Use Compatibility.....	11-41
12.0	ECONOMICS.....	12-1
12.1	Introduction.....	12-1
12.2	Capital Costs.....	12-1
12.3	Operating Costs And Revenues.....	12-3
13.0	IDENTIFICATION AND EVALUATION OF THERMAL MARKETS.....	13-1
13.1	Factors Affecting Economic Viability of Thermal Energy Markets.....	13-1
13.2	Methodology For Identifying Thermal Energy Markets In DuPage County.....	13-2
13.3	Results Of Thermal Market Survey.....	13-3
14.0	IDENTIFICATION AND EVALUATION OF POTENTIAL ELECTRICAL MARKETS.....	14-1
14.1	Types Of Potential Markets For Electricity.....	14-1
14.2	Evaluation Of Potential Energy Markets In DuPage County.....	14-4
15.0	ENERGY MARKET CONCLUSIONS.....	15-1
16.0	SITING.....	16-1
16.1	Introduction.....	16-1
16.2	General Site Considerations.....	16-2
16.2.1	Number Of Facilities.....	16-2
16.2.2	Land Requirements And Availability.....	16-2
16.2.3	Transportation Accessibility.....	16-3
16.2.4	Proximity To Utilities.....	16-3
16.2.5	Site Subsurface Conditions.....	16-3
16.3	Sites And Projects Previously Identified.....	16-4

16.3.1	Sites Identified In Waste-To-Energy Study.....	16-4
16.3.2	Sites Identified In The Waste Management Plan.....	16-11
17.0	PROJECT IMPLEMENTATION.....	17-1
17.1	Project Development Phase.....	17-1
17.2	Procurement Phase.....	17-3
17.3	Financing Phase.....	17-5
17.4	Construction And Start-Up.....	17-6
18.0	SUMMARY AND RECOMMENDATIONS.....	18-1

**LANDFILLING**

19.0	INTRODUCTION.....	19-1
19.1	Contents.....	19-1
19.2	Purpose.....	19-1
19.3	Changes In Regulation.....	19-1
19.3.1	Summary Of R88-7.....	19-2
20.0	OVERVIEW OF DESIGN COMPONENTS.....	20-1
20.1	Introduction.....	20-1
20.2	Design Period.....	20-4
20.3	Foundation And Mass Stability Analysis And Foundation Construction.....	20-4
20.4	Liner Systems.....	20-5
20.5	Leachate Systems.....	20-7
20.5.1	Leachate Drainage Systems.....	20-7
20.5.2	Leachate Collection System.....	20-7
20.5.3	Leachate Treatment And Disposal Systems.....	20-8
20.6	Landfill Gas Management Systems.....	20-11
20.6.1	Landfill Gas Venting System Standards.....	20-12
20.6.2	Gas Collection System Standards.....	20-13
20.6.3	Landfill Gas Processing And Disposal Systems.....	20-14

20.7	Groundwater Monitoring Systems.....	20-15
20.8	Surface Water Drainage.....	20-16
20.8.1	Runoff From Disturbed Areas.....	20-16
20.8.2	Diversion Of Runoff From Undistributed Area.....	20-17
21.0	OVERVIEW OF OPERATING PRACTICES.....	21-1
21.1	Introduction.....	21-1
21.2	Construction Quality Assurance Programs.....	21-2
21.3	Compaction And Placement Of Waste.....	21-3
21.4	Placement Of Cover.....	21-4
21.4.1	Daily Cover.....	21-4
21.4.2	Intermediate Cover.....	21-5
21.4.3	Final Cover.....	21-5
21.5	Salvaging.....	21-7
21.6	Leachate Sampling.....	21-7
21.7	Landfill Gas Monitoring.....	21-8
21.8	Groundwater Monitoring.....	21-9
21.9	Load Checking.....	21-12
21.10	Miscellaneous Operation Controls.....	21-13
22.0	CLOSURE AND POST-CLOSURE CARE.....	22-1
22.1	Introduction.....	22-1
22.2	Closure Planning.....	22-1
22.3	Post-Closure Care And Maintenance.....	22-1
23.0	ENVIRONMENTAL CONSIDERATIONS.....	23-1
23.1	Introduction.....	23-1
23.2	Air Quality.....	23-1
23.3	Surface Water Quality.....	23-2
23.4	Soil And Groundwater.....	23-2
23.5	Local Considerations.....	23-3

23.5.1	Odor.....	23-3
23.5.2	Noise.....	23-3
23.5.3	Traffic.....	23-4
23.5.4	Aesthetics.....	23-4
23.5.5	Land Use Compatibility.....	23-5
24.0	SITING.....	24-1
24.1	Site Selection For Previous Planning Efforts.....	24-1
24.1.1	Site Selection Consideration.....	24-1
24.1.2	Previously Identified Sites.....	24-4
24.2	Future Site Selection.....	24-4
24.2.1	Location Standards For All Types of New Landfills.....	24-5
24.2.2	Location Standards For New Landfills To Receive Putrescible Or Chemical Wastes..	24-6
24.2.3	Hydrogeologic Investigations.....	24-7
24.3	Summary.....	24-12
25.0	COSTS.....	25-1
25.1	Introduction.....	25-1
25.2	Capital Costs.....	25-2
25.2.1	Land Costs.....	25-2
25.2.2	Site Development Costs.....	25-3
25.3	Operational Costs.....	25-4
25.3.1	Site Operational Costs.....	25-4
25.3.2	Closure & Post Closure Care.....	25-5
25.4	Summary.....	25-6
26.0	PROJECT IMPLEMENTATION.....	26-1
26.1	Project Development Phase.....	26-1
26.2	Procurement Phase.....	26-3
26.3	Financing Phase.....	26-5
26.4	Construction And Start-Up.....	26-6
27.0	EXISTING LANDFILL SITES.....	27-1
27.1	Introduction.....	27-1
27.2	State Regulations For Sites.....	27-1

27.3	Overview Of Components At Existing Landfills.....	27-4
27.3.1	Underlying Geology.....	27-4
27.3.2	Leachate Collection And Treatment.....	27-4
27.3.3	Cover Systems.....	27-5
27.3.4	Gas Control And Collection.....	27-5
27.3.5	Groundwater Monitoring.....	27-6
27.4	Considerations For Continued Use.....	27-6
28.0	RECOMMENDATIONS.....	28-1

OTHER PROCESSING/DISPOSAL OPTIONS

29.0	INTRODUCTION.....	29-1
29.1	Contents.....	29-1
29.2	Purpose.....	29-1
30.0	OUT-OF-COUNTY/PRIVATE PROJECT OPTIONS.....	30-1
30.1	Introduction.....	30-1
30.2	Overview Of Advantages And Disadvantages Associated With Out-Of-County/Private Disposal Options.....	30-3
30.3	Essential Requirements For Acceptable Out-Of-County And/Or Private Disposal Options.....	30-4
30.4	Responses To County's Previous Request For Letters Of Interest For Out-Of-County Disposal....	30-5
30.5	Conclusions.....	30-5
31.0	OTHER PROCESSING AND DISPOSAL OPTIONS.....	31-1
31.1	Introduction.....	31-1
31.2	Composting.....	31-2
31.2.1	Introduction.....	31-2
31.2.2	Classifications.....	31-2
31.2.2.1	Aerobic vs. Anaerobic Composting.....	31-3
31.2.2.2	Mesophilic vs. Thermophilic Composting..	31-4
31.2.2.3	Mechanized vs. Non-mechanized Composting.....	31-4
31.2.3	Environmental Factors.....	31-5
31.2.3.1	Nutritional (Substrate) Factors.....	31-5
31.2.3.2	Physical Factors.....	31-6

31.2.4	Processing.....	31-7
31.2.4.1	Sorting.....	31-7
31.2.4.2	Grinding.....	31-7
31.2.4.3	Process Flow.....	31-8
31.2.4.4	Compost Process.....	31-14
31.2.5	Status Of Composting In The United States.....	31-18
31.3	Pyrolysis.....	31-19
31.3.1	Introduction.....	31-19
31.3.2	Industrial Development Of Pyrolysis....	31-20
31.4	Bioconversion.....	31-23
31.4.1	Introduction.....	31-23
31.4.2	Thermal Conversion Processes.....	31-24
31.4.3	Primary Biochemical Conversion Processes.....	31-24
31.4.4	Secondary Conversion Process.....	31-27
31.4.5	Synthetic Fuels.....	31-27
31.4.6	Bioconversion Process Pretreatment Technologies.....	31-28
32.0	RECOMMENDATIONS.....	32-1

## INTRODUCTION

### Contents

This Appendix to Plan-1990 examines final waste processing and disposal options. Appendix A-2 examines waste reduction, recycling and landscape waste diversion options while Appendix A-3 examines additional material recovery options by waste processing methods to further reduce the wastestream requiring disposal. This Appendix in turn examines options for waste management for the remaining waste after the use of options presented in Appendices A-2 and A-3.

This Appendix is divided into four broad categories for assessment including waste transfer; combustion; landfilling; and "other" processing/disposal options (i.e. out-of-county disposal and composting, digestion, etc.). Some of these options like waste transfer and combustion are actually further processing methods but are included in this Appendix because of their usual classification in the category of "disposal".

### Purpose

At the ends of both Appendix A-2 and Appendix A-3 the relative effects on remaining landfill capacities of the activities discussed in each appendix are summarized. Appendix A-2 concludes that with the implementation of the activities discussed therein that at least 20 years of landfill capacity can be expected at the two existing landfills, Mallard Lake and Greene Valley. Implementation of activities discussed in Appendix A-3 can further increase the expected lives of the landfills.

The purpose for Appendix A-4 is to assess and describe various options available for waste processing disposal after Phase I (waste reduction, recycling and diversion) and Phase II (materials recovery by waste processing). This Appendix is primarily provided

to support future discussions on final processing and disposal methods to be implemented. Any of the options discussed could be implemented while the current landfills are still in operation. In fact, it may be prudent to implement one or more of the alternatives discussed herein in addition to landfilling at Mallard Lake and Greene Valley in order to preserve local waste disposal capabilities.

appa4-i

**SECTION 1.0**  
**INTRODUCTION**

1.1 CONTENTS

Sections 1.0 through 5.0 provide an assessment of waste transfer options for solid waste management. An overview of several different systems is provided along with environmental; economic; implementation; and siting considerations. The use of transfer stations may be considered both for transport of waste within DuPage County as well as for the transfer of waste to a remote (out-of-county) disposal site.

1.2 PURPOSE

Waste transfer options are described in order to provide guidance for the possible future provision of new facilities. Waste transfer can be used simply to consolidate waste for more cost-effective transport. A waste transfer operation can also provide a mechanism for the additional processing of waste employing material recovery mechanisms discussed in Appendix A-3 thereby reducing the amount of material requiring final disposal.

appa4-1

**SECTION 2.0**  
**OVERVIEW OF SYSTEMS**

2.1 INTRODUCTION

Waste transfer is the process in which collection vehicles unload their waste at a facility which combines the waste into a larger load. Several smaller loads are consolidated into larger vehicles which are better suited for long-distance hauls than are collection vehicles. The larger units then haul the wastes to the disposal site.

The larger more cost-efficient vehicles are usually tractor-trailer trucks although trains and, even, barges may be used. Transfer trailers may take waste only a few miles but generally they haul waste for distances greater than 15 miles.

There are several benefits for transfer stations. First, transfer stations can decrease disposal costs by implementing recycling (processing) operations at the facility in order to reduce the amount of waste being sent to the disposal site. Second, transfer can reduce the hauling costs to distant disposal sites. Other benefits include:

- Reduction in collection vehicle maintenance;
- Flexibility in use of multiple disposal sites; and
- Improved productivity of collection vehicles.

Several types of transfer technologies are available including stationary compactors; open top trailers; balers; and other technologies. Similarly, there are several types of transport systems available including truck transport and rail transport as well as intermodal transport (a system where truck bodies are loaded onto or are used as railcars). Barge transport, not in common use, has not been included in this document due to the

requisite special circumstances which usually lead to its selection including water access at both the generating and disposal ends of the system.

## 2.2 TRANSFER TECHNOLOGIES

### 2.2.1 Stationary Compactors

Hydraulically operated compactors are manufactured by a number of companies and the technology has been refined over the past 25 years. Various sizes of compactors are widely available allowing the selection of a system which can handle a few tons to several hundred tons per day.

In a compactor, the charging box is loaded with loose wastes from above through a hopper or chute. A hydraulic cylinder moves a ram forward to push the wastes out of the charging box and into a transfer container or a trailer. The container or trailer is attached by a hook and ratchet assembly to the compactor. As the trailer fills up, compaction takes place by the pressure applied from the ram. When a pre-set hydraulic pressure is reached, the compactor stops.

There are four basic compactor arrangements which may be used and they are described below.

Compactor/roll-off. These systems are usually used for small (less than 50 tons/day) operations. Equipment includes compactors rated at 3 to 4 cubic yards, with closed roll-off containers of approximately 40 cubic-yard capacities. Payloads are generally in the 8 to 10 ton range.

Compared with high-density, large-body rear or front loader collection vehicles, these systems may offer no significant economic or operational advantages. The use of ejection containers can push payloads to 14 tons with capacities of 44 to 48 cubic yards.

Compactor/trailer. These systems are used for large tonnage and/or long haul operations usually in excess of 100 tpd.

Large tonnage transfer stations will usually have multiple compactors. Trailers commonly used with these systems have a 65 cubic yard capacity. Using steel transfer trailers can result in payloads of 17 to 18 tons. However, trailer axle weight limits can be exceeded because most compaction takes place within the rear-most portion of the trailer as it fills. Use of aluminum trailers and other methods to reduce trailer body weight can increase payloads.

Compactor/push pit/trailer. Push pits are similar in size and operating concept to a compactor/transfer trailer operation without the top or rear door. Refuse is dumped directly into the pit where a hydraulic blade advances the waste to the compactor charging box. Push pits can allow storage capacity during peak periods.

Self-contained trailer units. These units can be used where refuse can be pushed into the trailer from above. The trailer ejection blade is used to push and compact refuse to the rear of the truck. Payloads are similar to those for compaction transfer trailers (17 to 18 tons).

#### 2.2.2 Open Top Trailers

The use of these trailers is quite common. The principle is used for both trucks and trains. Several floor plan arrangements are available and described below.

Tipping floor transfer stations. These are arranged with a collection vehicle unloading area (tipping floor) and a trailer loading area. The trailer can be positioned at various grades relative to the tipping floor because loading equipment (rubber tired or track loaders) are used to transfer the waste from the tipping floor to the transfer trailer.

These facilities can handle in excess of 1,000 tons/day depending on the number of trailer loading positions, loading equipment, and tipping area. Tipping floor transfer stations isolate the tipping floor operation from the transfer loading operations.

Direct dump transfer stations. These are arranged with two levels. The upper level is where collection vehicles back into position for unloading. Transfer trailers are located below. Usually, various types of cranes are used to pack and move waste which is dumped into the trailers and may remove items not suitable for transport and disposal. Generally speaking, these are lower capacity transfer stations because the operation is directly dependent on the accessibility to a transfer trailer:

Pit type transfer stations. These are effectively used for high volume operations. Facility sizes may range from 500 to 2,500 tons/day. Pit type facilities separate collection vehicle unloading and transfer trailer loading operations. There are three levels characterized as follows.

- The upper level is where collection vehicles unload into the pit.
- In the pit (intermediate level), waste is compacted and worked in a manner similar to that employed at a sanitary landfill. The bulldozer pushes the waste to the far end of the pit where the waste falls into transfer trailers. A crane (knuckleboom crane) may assist in loading.
- The lower level is where the transfer trailers are parked.

The transfer trailers used for open top operations are selected based on materials handled, unloading method at the disposal site, haul distance and economics. Payloads for self-unloading transfer trailers will usually range from 20 to 22 tons while the use of a tipper (hydraulically inclined platform) at the disposal site can increase payloads to 26 tons.

### 2.2.3 Balers For Transfer

Balers are machines that use rams to compress waste and hold it until wire ties can be placed to hold the compressed waste together in the compressed bale. Solid waste bales are generally in the 2,000 to 2,500 pound range and typical volumes are 50 cubic feet.

Baling facilities require a receiving floor area where collection vehicles unload. A loader is used to feed waste into the infeed conveyor for the baler. These conveyors are typically steel. The conveyor feeds into the baler.

A forklift or skid loader picks up the bales and loads them into the transport vehicle. For trucks, flatbed trailers are usually used due to the low trailer tare weight and consequent

higher payload (23 to 25 tons).

There are more than 40 baler manufacturers according to the "Waste Age 1988 Equipment Processing Guide". Typical processing rates are 25 to 35 tons/hour.

#### 2.2.4 "Other" Transfer Technologies

There are several specialized forms of equipment available for waste transfer which do not fit in any of the above categories. These systems produce a "log" or "cast" of waste material by compressing the waste through tunnels. The waste is then loaded directly into trailers. Because the compression occurs in the tunnel, trailers can be lighter weight thereby increasing payloads.

#### 2.2.5 Summary Of Transfer Technologies

The relative advantages and disadvantages for technologies addressed in Section 2.2 are summarized below.

##### Stationary Compactor/Roll-Off

###### Advantages

- Low development cost for "mini transfer station."
- Light density material can be compacted into containers.
- Refuse can be loaded directly into containers and not exposed on receiving floor.

###### Disadvantages

- Suitable only for small capacity systems.
- With small compactors, not all refuse can be compacted into containers, creating bridging (arching) in hopper and rendering compactor inoperable until bridging material is removed.
- Low ton payload per container.
- Spillage of refuse onto the ground when container is pulled away from compactor.
- If compactor becomes inoperable, roll-off container cannot be loaded.

## Stationary Compactor/Trailer

### Advantages

- Most bulky refuse can be handled by compactor.
- Light density refuse can be compacted into trailer.
- Refuse can be loaded directly into trailer.
- Securing rear trailer door is easier than placing tarps on top-loading trailers.
- Trailer unloading by push-out blade is very effective.
- Adaptable to materials recovery.

### Disadvantages

- Lower trailer payload than other approaches, typically due to overloading of rear axles and/or heavier empty weight trailers than open-top trailers.
- If compactor becomes inoperable, transfer trailers cannot be loaded.
- Little payload advantage to unloading high volume, high compaction collection vehicle into compactor and trailer.
- More equipment required than for top-loading trailers.
- Spillage of refuse onto ground when trailer pulled from compactor.

## Stationary Compactor-Pushpit/Trailer

### Advantages

- Most bulky wastes can be handled by compactor.
- Light density refuse can be compacted into trailer.
- Securing rear door is easier than placing tarps on top-loading trailers.
- Allows additional storage of refuse in a pit during peak arrival rates.
- Refuse can be loaded into trailer from confined area.
- Trailer unloading by push-out blade is very effective.

### Disadvantages

- Lower trailer payload than other approaches, typically due to overloading of rear axles and/or heavier empty weight trailers than open-tops.
- Refuse can bridge in hopper, rendering compactor inoperable until cleared with a backhoe or by hand.
- If compactor becomes inoperable, transfer trailers cannot be loaded.
- Capital costs greater for compaction equipment than for other transfer operations.
- More equipment required than for compactor only system.
- Vehicles cannot unload into pit when pushpit blade is extended.

- Flat materials (such as cedar shakes and roofing shingles, if dumped in one load, can bind rams between floor and bottom of blade.
- Little payload advantage to unloading high volume, high compaction collection vehicle into compactor trailers.
- Spillage of refuse onto ground when trailer pulled from compactor.

### Open-Top, Tipping Floor

#### Advantages

- Least elevation difference of any open-top design; least site work and building cost.
- Trailers are typically driven through, trailers do not back into position.
- If transfer trailer becomes inoperable, another one can be driven into position.
- Collection vehicle unloading is separate from loading and transfer operations.
- Higher payloads than compactor transfer trailers (except new compactor trailer designs).
- Equipment that loads trailers also compacts loads in trailer.
- Adaptable to materials recovery.

#### Disadvantages

- Light density material not readily compacted in trailers if it constitutes a high percentage of the load.
- Additional handling of wastes required to load trailers (compared to direct dump approach).
- Bulky wastes not as readily handled compared to compactor or open-to-pit, unless mobile equipment is used to break up these materials.

### Open-Top, Direct Dump

#### Advantages

- Simple operation.
- Trailers drive through into loading position.
- If transfer trailer becomes inoperable, another trailer can be driven into position.
- Higher payloads than compactor transfer trailers.

#### Disadvantages

- Requires backup tipping floor or trailers for peak arrival of collection vehicles.
- Collection vehicle unloading is not separate from loading and transfer operations.

- Separate trailer packing machine required (knuckleboom loader, track hydraulic excavator).
- Light density material not readily compacted in trailers if it constitutes a high percentage of the load.

### Open-Top, Pit

#### Advantages

- Collection vehicle unloading separate from loading and transfer operations.
- Light density materials can be worked and compacted.
- Trailers typically driven forward into loading position.
- Higher payloads than compactor transfer trailers (except new compactor trailer designs).
- If trailer becomes inoperable, another trailer can be driven into position.
- Adaptable to materials recovery.
- Efficient use of space and equipment for high volume operations.

#### Disadvantages

- Three-level facility requires greatest amount of site work and building cost.
- Additional handling of material required, compared to direct dump.
- Construction and operations costs excessive for smaller operations.

### Baling

#### Advantaged

- Transfer of large payloads per truck.
- Shipment of bales is most flexible; any type of truck, rail, or barge can be used.
- Facility constructed on one level; site and facility costs are low.
- Collection vehicle unloading operations are separate from processing and transfer operations.
- Some landfill operations can operate at lower unit costs with bales than with loose refuse.
- Can be used to bale some types of recyclable materials.

#### Disadvantages

- If baling system becomes inoperable, facility cannot transfer wastes unless backup transfer method is available.
- Initial processing equipment cost is greater than other technologies.

- Regular maintenance required for wire tie (strapper) mechanism.
- Multiple handling of refuse (loose and baled).
- Some disposal facilities cannot accept bales.

## 2.3 TRANSPORT SYSTEMS

### 2.3.1 Truck Transport

The most common method of waste transfer transport in the United States is truck transfer. The reasons for this include:

- Flexibility in siting of transfer stations;
- Flexibility in selection of final disposal sites;
- General availability of over-the-road truck drivers and equipment; and
- Flexibility in scheduling.

Waste transfer has, until recently, been used most often to avoid local waste disposal facility shortages. In areas where the development of new waste facilities were not developed at a pace to keep up with facility closure, waste haulers found that they had to quickly provide transport to more distant sites. Usually the use of specific distant sites was not on a long-term basis. Therefore, the flexibility in final destination allowed by trucking was desired. As destination sites filled, closed, or otherwise limited the inflow of transfer waste, the transfer operators could easily shift to alternate disposal sites.

Several options are available for truck transport systems. Initially the most common vehicles used for transfer were either box or flat trailers used to haul loose and baled wastes. As transfer operations have become more common, specialized trailers have been developed to handle this specialized cargo. Today's modern transfer trailers have specially fabricated bodies often using lightweight aluminum alloys in order to maximize effective

payloads. They also usually employ some type of self-unloading equipment which may be a hydraulic ram system or "walking-floor" system. The use of walking floor systems has substantially increased the effective payloads of self-unloading trailers by alleviating the hydraulic ram weight used by other trucks.

### 2.3.2 Rail Transport

Although the use of trucks for waste transfer is most common, rail transfer is being discussed more frequently as a viable transport method. One reason for this is the move towards dedicated long-term distant disposal sites. In the case where a transfer operator can lock-in a disposal site with rail access for an extended period of time, the use of rail transport can be very cost-effective, especially in cases of long transport distances. Even for relatively short transport distances, the use of new railcar designs can make rail transfer economical. The following issues must be considered by those considering rail transport for waste transfer.

1. Is the use of rail transport economical compared to motor transport?
2. Are the anticipated costs for rail transport being prepared in a manner for fair comparison with motor transport? As an example, rail transfer costs are often prepared with the assumption that all equipment will be new. Truck transport usually does not make this assumption.
3. Rail transport will tend to drive waste disposal contracts towards longer terms. This is a real advantage for waste-to-energy disposal projects but even landfill disposal sites can show economical advantages for rail transport if long-term contracts are possible.
4. The common misconception that rail transport is cost-effective only for long distance must be avoided. Rail transport can be cost-effective at relatively short distances (25-30 miles) if project conditions are correct.

There are three modes of rail transport available for

consideration broadly categorized by the use of standard or slightly modified railcars, specialized railcars and intermodal transport. A brief description of each type follows.

Standard or Modified Rail Cars. In this system common rolling stock is used. In the most basic systems a standard boxcar or flatcar is used to transport baled waste. Loading and unloading of the cars is facilitated by the use of bales.

Some systems modify existing rolling stock to better handle waste transfer. An example of this type of system would be the Bay Colony Railroad operation operated as part of the SEMASS regional disposal system in southeast Massachusetts. In this system, Model B boxcars have been modified by cutting the tops off and reinforcing them to allow removal and replacement; installing grab locations on the sides to allow for hooks to engage at the tipping station; placement of reinforcing walls inside the cars; and complete sealing of the boxcar. Each boxcar will hold about 40 tons of waste. The reported cost for these modifications is approximately \$20,000 each in a production run of 12 to 14 boxcars.

Specially Developed Rail Cars. These systems use specially designed railcars employing various levels of design sophistication. For example, in Europe there are several installations employing railcars that resemble tubes or containers. Waste is forced into the container at the transfer site and ejected at the disposal site by any of several methods. Such systems are just now being discussed for possible use in the U.S. These systems, employing very specialized equipment, have not yet shown a cost for installation and operation in the U.S.

Intermodal Transport. Intermodal transport of a variety of

cargos has become quite widespread in recent years. Use of intermodal transport systems for waste transport is relatively new.

In an intermodal system a combination of truck and rail (and perhaps ship) transport is used. Cargo is usually loaded into containers which can be fitted into truck trailers or loaded on trains and ships. As an alternative, there are some truck trailer manufacturers which market specially fabricated truck trailers which allow for the attachment of railroad trucks (wheel assembly) to the trailer.

The obvious advantage for the use of intermodal transport systems is the great flexibility in siting of facilities. The cost-effectiveness of rail transport can be used for long-distances while not requiring that the transfer and/or disposal site have direct rail access. However, this flexibility does not usually come cheaply because waste is essentially double-handled. The waste must first be loaded into a truck and then the truck must be loaded onto a train. Both operations can be costly. Repeating this operation in reverse for unloading carries obvious cost consequences. Access to an existing rail yard with intermodal transfer capability can improve cost factors. At this time it would appear that intermodal transfer should be carefully considered in the following scenarios:

1. Where truck transfer is already occurring but transfer distances are becoming greater and greater thereby making rail transfer more cost beneficial (witness East coast waste transfer);
2. Where either the transfer or disposal site do not have direct rail access but train transport is desired; or
2. Where intermediate transfer points in a large regional system may be truck based leading to a centralized rail transfer facility.

appa4-2

**SECTION 3.0**  
**ENVIRONMENTAL CONSIDERATIONS**

**3.1 INTRODUCTION**

Environmental and regulatory issues relating to the siting, design, construction and operation of a waste transfer facility can be complex. Of particular concern are the issues of water pollution, odor, noise, traffic, aesthetics, land use compatibility, and floodplain or wetlands impacts. This Section identifies and discusses these impacts.

**3.2 WATER QUALITY**

Waste transfer facilities can potentially impact water quality by allowing runoff of liquid which has been in contact with waste to be discharged to surface water. There are three sources for origination of liquids at the facility including liquids arriving with the waste or snow and ice tracked into the facility by delivery vehicles; water used for washdown of the facility; and precipitation occurring outside of the building but at the site.

The first two sources of liquid are easily captured within the facility by the use of interior plumbing and drains. This plumbing is tributary to a municipal sewer system or an on-site sewage treatment facility. The resultant liquid is, therefore, collected and treated prior to discharge to surface waters.

Liquids originating outside of the building are best kept from becoming contaminated by effective housekeeping. Waste should not be present outside of the building. Precipitation is normally routed through a series of storm drains for discharge. Often, facilities will employ catch basins and other settling appurtenances to control the discharge of particulate matter.

### 3.3 ODOR

The potential for odor emission and resulting impacts to surrounding land uses is an important consideration when providing waste transfer facilities. Effective odor control mechanisms must be included in the facility operations in order to prevent the migration of odors beyond the facilities boundaries.

Objectionable odors generally form when municipal solid waste is left for more than one day. Excessively wet waste can produce odors in a shorter period of time because the existence of soaked waste leads to anaerobic biological conditions which can produce foul odors. Most waste transfer operations are designed to remove all waste from the facility on a daily basis. In other words, all waste delivered during the day is transferred out by the end of the day.

Some large scale facilities are designed not to empty every day. In these, a waste pit may be used (refer to Section 2.0 discussion of push pits). In these facilities the use of an induced inward draft may be used to pass fresh outside air through the entry doors and out through a usually high vent or series of vents which can effectively serve to disperse odors. A facility may also employ mechanical/chemical odor cleansing equipment.

Use of these methods of odor control can effectively prevent odor migration at waste transfer facilities. The selection of a specific control mechanism to be used would be dependent on a number of factors specific to the project.

### 3.4 NOISE

The primary sources of noise from a waste transfer facility include construction of the facility, daily operation of equipment inside the facility, and facility-generated traffic. In reference

to construction noise, it is estimated that a waste transfer facility sized to meet the needs of DuPage County would involve a construction period of 18 to 24 months. Operation of construction equipment is normally limited to daytime hours and required to comply with local ordinances.

The major source of operational noise is use of the equipment inside the facility. Equipment will include mechanized movers such as endloaders but may also include crane-type assemblies and balers. Other sources of noise such as ventilation fans, conveyors and loud speakers are comparatively insignificant and should not increase overall noise levels above other operational sources.

The truck (or train) traffic generated by a waste transfer facility can also increase surrounding traffic noise levels. Any increase in traffic noise would be expected to be limited to daytime working hours.

There are no federal noise regulations that apply to the operation of waste transfer facilities. Therefore, only state regulations and local ordinances would apply. State regulations and local ordinances that would apply include Illinois Pollution Control Board noise regulations and noise standards contained in the performance standards section for local zoning ordinances.

### 3.5 TRAFFIC

Siting a waste transfer facility would require a detailed analysis of the short and long-term traffic impacts caused by the facility. These impacts would result primarily in an increased concentration of truck traffic, assuming the transfer facility is located away from the existing disposal site(s). Some traffic would result from the employees of the facility. The impacts are highly site specific and should be considered in the evaluation of possible sites (refer to Section 5.0).

### 3.6 AESTHETICS AND LAND USE COMPATIBILITY

It is essential that the surrounding land use and aesthetic treatment of any proposed waste transfer facility be considered during project development. For a discussion of land use compatibility refer to Section 5.0.

Aesthetic treatment of the facility can mitigate apparent negative impacts of the facility. Enclosing the operations of the facility and use of an architecturally pleasing building can be used effectively. The use of sight berms, landscaping or fencing can be used to screen the facility from view. Finally, careful consideration of site layout can minimize public views of waste vehicles and tipping areas (doors).

appa4-3

## SECTION 4.0

### COSTS

#### 4.1 COSTS AT TRANSFER STATION

##### 4.1.1 Capital Costs

Costs specific to construction of the transfer station are influenced by the building's construction, architectural treatment, technology selection and land costs. Costs may be controlled by the use of an existing building but caution must be exercised when considering the use of an existing building. For instance, consideration should be given to whether or not the existing building can be effectively modified for the purposes of use for a transfer facility and whether or not surrounding traffic specifics and land use would be conducive to the siting of a transfer station.

The DuPage County Landfill/Ashfill Feasibility Study (1988) proposed that a facility sufficient for providing 800 to 1,000 tons per day of capacity would require 8 to 10 acres of land. Assuming land costs at \$3.50 per square foot, an upper estimate for land costs of \$1,525,000 results. A minimum processing area of 35,000 square feet can be expected for an open top transfer trailer type facility. If full development costs including building, site work, engineering, permitting, legal, and accounting are estimated at \$170 per square foot, then a construction cost of \$5,950,000 results bringing total construction and site development costs to \$7,475,000. The cost for three wheel-loaders is estimated at \$200,000. The addition of sophisticated baling equipment and tipping floor improvements could substantially increase this estimate of costs.

If the transfer station is capable of transferring 1,000 tons per day and operates 5.5 days per week, it is capable of

transferring 286,000 tons per year. Assuming a 20 year life on the facility (five years for loaders) and no salvage costs for land at the end of the useful life, the cost per ton to construct such a transfer facility is approximately \$1.45. This cost does not include the cost for financing the capital costs which can substantially increase the effective cost per ton.

The costs for the construction of a rail transfer facility are nearly inestimable until the specifics for the type of rail haul and requirements and responsibilities for the unloading of the refuse at the disposal site have been determined. Will the refuse be shipped loose or baled? Is a rail siding available at the disposal site or will intermediate transfer be required? Who will be responsible for the unloading at the disposal site? These questions represent just a sampling of those which must be addressed when considering rail transfer.

#### 4.1.2 Costs To Operate

Table 4.1 provides a summary of the expected operational costs for the truck transfer facility described in Section 4.1.1.

**TABLE 4.1  
TRANSFER STATION OPERATING COSTS**

<u>ITEM</u>	<u>ANNUAL COST</u>
Utilities	\$ 45,000
Building And Site Maintenance	\$ 20,000
Fuel For Wheel-Loaders	
- 3 loaders @ 5 gallons/hr. @ \$1.10/gal.	\$ 37,750
Maintenance For Wheel-Loaders	\$ 35,000
Personnel	
- Foreman (1)	\$ 45,000
- Loader Operators (4)	\$105,000
- Scale Operator (1)	\$ 25,000
- Laborers (4)	\$ 88,000
- Fringe (30%)	\$ 78,900
- Overtime Allowance (15%)	\$ 39,450
<b>TOTAL OPERATING COSTS</b>	<b>\$519,100</b>
<b>COST PER TON (286,000 TONS)</b>	<b>\$1.81</b>

## 4.2 COST TO TRANSPORT

The cost for transport is directly dependent upon the decision of whether or not the operation will be contracted out or operated internally. In truth, the impact on cost is a function of the availability of equipment. If the transport is to be performed by the transfer station operator it is unlikely that the transport equipment will already be owned. Further, the use of new vehicles may be sought in order to provide a higher degree of aesthetic treatment for the operation. On the other hand, if the transport function is contracted out to private over-the-road operators, the costs for new equipment are not required because these operators will most likely have existing rolling-stock to commit to the job.

## 4.3 SUMMARY

The costs for the construction and operation of a waste transfer facility would indicate that the direct costs for an open-top trailer type facility capable of transferring 1,000 tons per day would be approximately \$3.26 per ton. A 1,000 ton per day transfer operation would be judged as a large transfer facility at this time in the United States. A larger facility, although possibly benefiting from an incremental savings in building costs, can be expected to carry possibly higher development costs due to the inherent difficulties in handling a greater volume of waste on a daily basis. Note that it is estimated that DuPage County would require approximately 2,150 tons per day of transfer capability in 1995 after the implementation of waste management phases I and II.

It must be stressed that the \$3.26 amount does not include the costs for financing of the capital construction and equipment costs. Financing costs can add 60% to the actual costs if financed by government as non-taxable debt and more if financed as taxable debt by private interests.

With these considerations in mind, it is easy to understand why a common value of approximately \$10 per ton is often used for initial comparisons of the cost to transfer compared to local disposal. The \$10 figure represents an industry value which is useable for initial discussions of waste transfer. To this, the cost of transport can be added on a per ton/mile basis to approximate the costs for waste transfer.

appa4-4

**SECTION 5.0**  
**SITING CONSIDERATIONS**

**5.1 INTRODUCTION**

The selection of a proper site for a waste transfer facility should be carefully considered in order to meet the expected goals for the provision of the waste transfer facility. The facility must be located at a site which is both convenient to local haulers delivering waste to the facility as well as being convenient for use for the transport mode selected to transport the waste to the disposal site.

In order to evaluate the convenience to local haulers it is normal for a waste transfer siting analysis to be performed. One of the outputs of this analysis is the determination of the relative generation of waste on a sub-regional basis in order to derive a centroid, or centroids where multiple facilities are proposed, for waste generation. This information can be very useful in the evaluation of optimal sites for the placement of facilities.

In previous solid waste planning efforts, the size of DuPage County has been shown to not necessarily require the provision of two waste disposal facilities for reasons of local transport effectiveness. The county is roughly 18 miles square which is well within the waste industry's normal transport distance range for packer vehicles. Therefore, the placement of just one transfer facility in the county would appear to offer no significant disadvantage from a local waste transport standpoint. The determination of sub-regional waste generation data would be helpful if multiple sites are identified in the county at diverse locations. Multiple facilities may be required or advisable due to local constraints which might include available land size or limitation of local impacts.

## 5.2 LAND REQUIREMENTS

The amount of land required for a transfer facility will depend on the size of the facility to be constructed; the type of transfer technology to be employed as well as the transport method to be used; and whether or not other processes will be employed at the facility such as materials recovery through waste processing (refer to Appendix A-3). The most significant constraint imposed on the requirement for the size of the site at this time though is specified in the Illinois Environmental Protection Act at Section 22.14:

"No person may establish any regional pollution control facility for use as a garbage transfer station, which is located less than 1000 feet from the nearest property zoned primarily for residential uses or within 1000 feet of any dwelling except in counties of at least 3,000,000 inhabitants."

If it is assumed that the minimum size for a building would be on the order of 45,000 square feet, the minimum acreage required to meet this setback requirement, if surrounded by an area of residential nature, would be approximately 112 acres. This estimate represents worst case conditions in the assumption that the facility would be surrounded by residential land but is illustrative when considering the general nature of land use in DuPage County. In order to provide this setback requirement it would be advantageous to use the distances for buffer which may be afforded by other land uses in a given area. Siting a facility next to an existing industrial use zoned area or agricultural use area are examples which would provide obvious advantages because the total land required to achieve the required setbacks would not have to be purchased as part of the project. Note that the setback requirements apply to the facility itself, not the entire site which may include roads or other site improvements supporting the transfer facility.

A transfer station of sufficient size to meet the County's

needs can be expected to occupy anywhere from 5 to 20 acres, depending on the facility's specific development plan and mode of transport. It can be expected that rail transfer might require a larger site than a correspondingly sized truck transfer facility.

### 5.3 TRANSPORTATION ACCESSIBILITY

In addition to considering the impact that the transfer facility will have on surrounding traffic conditions, consideration must be given to locating the facility close to or on major transportation routes. This is especially important where truck transfer is anticipated because the out-going trucks will be large over-the-road vehicles. If rail transport is to be used, the site must be located in the immediate vicinity of a rail line unless intermodal transport is proposed.

### 5.4 PROXIMITY TO UTILITIES

The utilities required for the operation of a waste transfer facility include telephone, sewer, electric, water and possibly natural gas. Selection of a site where utilities are readily available is preferred because the cost of extending utilities can be substantial.

### 5.5 SITE SUBSURFACE CONDITIONS

It can be expected that a waste transfer facility will require the construction of a relatively large building designed for heavy use. Heavy equipment and truck traffic will be utilized at such a facility. These conditions demand that stable soils capable of bearing these loads exist at the site. Soils unable to bear the loads imposed by the building and equipment would require more expensive foundation work.

A waste transfer facility may include a tipping hall or a

storage pit. Where the design of the facility includes a pit or other subsurface improvements, groundwater and bedrock depth should also be examined. Shallow conditions for either of these items could complicate construction and substantially increase costs.

appa4-5

## SECTION 6.0 IMPLEMENTATION

The implementation of a project involving the transfer of waste is directly dependent upon decisions made regarding the management of waste discussed in other sections of this planning document. For instance, Appendix A-3 addresses materials recovery options involving waste processing. A logical location for this activity is at a transfer station if the transfer of waste is envisioned in the waste management system. However, where will the processed waste then be sent to? Will it be sent to a distant landfill? Perhaps it will be sent to a waste-to-energy facility which may be located locally. Or, in the case of DuPage County, perhaps the two existing landfills in the county will be available for an extended period of time. In either of these local scenarios there may be no need for an intermediate transfer of waste unless there is a desire to minimize some impact (i.e. truck traffic) at the disposal facility.

As stated in Section 2.0, waste transfer should be viewed as a mechanism to make waste delivery more efficient. It is not a processing or disposal mechanism which substantially changes the characteristics of the waste. The basic system of disposal should be fairly well defined before decisions are made regarding the implementation of a transfer facility.

If there are advantages to the provision of a waste transfer component in the solid waste management system, several key activities are required in the implementation process. These are generally described as follows:

1. Assess delivery standards at the disposal facility. How will the waste be received at the disposal facility? Will baling be required or will loose waste be acceptable? Will train transport be possible and, if so, is it cost-effective to provide when compared to motor transport? These types of questions must be addressed as

a first step in assessing and developing a waste transfer project.

2. Determine locational information for the generation of solid waste. Waste transfer is appropriately viewed as a mechanism to provide efficient waste transfer. To maximize this function, it is worthwhile to determine information regarding the generation of waste on a sub-regional basis. It is logical to locate the waste transfer facility(ies) at or near the centroid(s) of solid waste generation in a given area. However, other constraints such as surrounding land uses or land costs may preclude the placement of transfer facilities at locations judged to be optimal from a waste generation and transport standpoint.

This locational information can also be used to determine the number of facilities which should be provided. It may be appropriate to provide two or more facilities if conditions warrant.

3. Determine specific site attributes to be sought for site selection. Section 5.0 described general site attributes viewed as advantageous when considering transfer sites. More specific site attributes or limits may be incorporated into the evaluation process as project consideration proceeds. For instance, the requirement for access to rail may be one of the most important site attributes if the disposal system warrants rail transport. This would substantially reduce the number of sites available for consideration.
4. Locate sites for consideration and select. A screening process should be conducted to determine possible locations for a waste transfer facility. Following the identification of potential sites, selection should be made after evaluation of the potential sites.
5. Proceed with local siting approval process and permitting as required. Transfer stations are currently defined by the Act as Regional Pollution Control Facilities and as such are required to be approved according to the local (SB-172) siting process. IEPA permits are not specifically required by the Act. The future requirements of both of these actions is uncertain at present time.

Items 1 through 4 above are commonly referred to as the performance of a transfer station siting analysis followed by selection. The performance of the transfer station siting analysis

without the consideration of final selection could be expected to require approximately six months. Local siting approval can be expected to require at least six months but would most likely require a preliminary design period (sufficient to support the local siting approval process) to precede it of approximately four to six months. Detailed design could be expected to require an additional six months. Therefore, a minimum period of two years would be required to implement a process to provide for the bidding and construction of a transfer facility. Bidding and construction of a completely new facility could be expected to require approximately 18 to 24 months resulting in a total project implementation schedule of 4 to 4.5 years. The use of an existing building could reduce this time period.

appa4-6

**SECTION 7.0**  
**RECOMMENDATIONS**

Sections 2.0 through 6.0 have presented information which can be used by DuPage County if it is determined that waste transfer capability is desired. Waste transfer could conceivably be developed under three scenarios:

1. Transfer Within The County: It may be desirable to provide transfer capability within the county with the waste being tributary to a disposal facility also located in the county. This could be done in order to maximize waste transport efficiencies or to minimize local traffic impacts at the disposal facility. The cost-effectiveness of this type of facility would have to be carefully evaluated in light of the availability (time) and location of the disposal facility(ies) in the county.
2. Intermediate (Phased) Transfer: Under scenario 1 it should be possible to properly place a transfer facility(ies) which would be available for an extended period of time allowing transfer of waste outside of the county in the future after in-county disposal is not possible. This scenario would be practical if in-county disposal options are only available for a limited amount of time in the future. In this way waste disposal options could be phased.
3. Transfer Outside Of The County: In this scenario the transfer facility(ies) are provided to allow for the transfer of waste outside of the county for disposal.

In each of the above scenarios it would be worthwhile to consider the provision of materials recovery capability by waste processing as discussed in Appendix A-3. This would allow for the efficient transfer of waste by minimizing the amount of material to be transported for final disposal.

The following recommendations are proposed for the evaluation and implementation of waste transfer capability in DuPage County:

1. The availability of in-county disposal capability should be determined. If in-county disposal will be available for an extended period of time, the provision of transfer capability may be unnecessary. However, even if in-

county disposal capability will be available for an extended period of time, the practicality and desirability of providing transfer capability in the county should be evaluated as a mechanism to improve waste transport efficiencies and to minimize local traffic impacts.

2. If waste disposal outside of the county is to be sought, the delivery requirements at the location for disposal should be determined. Although it is conceivable to site and construct a transfer facility which will allow for the transfer of waste to various disposal sites, it is preferable to know the delivery requirements of the specific site prior to construction of the transfer station(s).
3. If it is determined that transfer capability should be provided, a transfer station siting analysis should be performed. The analysis would include, at a minimum, the determination of waste generation profiles in the county and provide a site screening process to identify possible sites for the placement of one or multiple transfer station(s). Criteria to be used in the evaluation of site(s) would include those discussed in Section 5.0 as well as any more specific siting criteria developed prior to the start of the analysis.
4. Following the selection of a site or sites identified during the siting analysis, the implementation process generally described in Section 6.0 should be implemented. The local siting approval and construction process will require 4 to 4.5 years to implement and this consideration should be factored in to relative waste management system timelines.

appa4-7

---

**APPENDIX A-4**  
**SECTIONS 8.0 THROUGH 32.0**  
**INTENTIONALLY OMITTED**

---

---

**APPENDIX 8-D**

**DUPAGE COUNTY SWMP  
1996 UPDATE**

---

VOLUME I

**SOLID WASTE PLAN FIVE-YEAR UPDATE**

DU PAGE COUNTY, ILLINOIS  
June 5, 1996



**FINAL COPY**

1996  
SOLID WASTE COMMITTEE  
DuPage County, Illinois

COUNTY BOARD MEMBERS

Dean R. Westrom (Dist. 6), Chairman  
William J. Maio (Dist. 1)  
Irene M. Stone (Dist. 2)  
Barbara R. Purcell (Dist. 3)  
R. Lloyd Renfro (Dist. 4)  
John J. Case (Dist. 5)

MUNICIPAL MEMBERS

James A. Addington (Dist. 3), Vice Chairman  
Angelo Chrysogelos (Dist. 1)  
Walter C. Imrie (Dist. 2)  
Arthur W. Angrist (Dist. 4)  
Douglas P. Krause (Dist. 5)  
John J. Bajor, Jr. (Dist. 6)

THIS DOCUMENT PREPARED BY THE DU PAGE COUNTY SOLID WASTE DEPARTMENT.

Kevin T. Dixon, Director

DuPage County Center  
421 N. County Farm Road  
Wheaton, Illinois 60187  
630-682-7373  
Fax 630-682-7374

# SOLID WASTE PLAN FIVE-YEAR UPDATE

June 5, 1996

## TABLE OF CONTENTS

Page

### **Section 1 - Executive Summary**

1.1 Executive Summary.....	2
1.2 Background and Review Process.....	6
1.3 Administrative Functions.....	7

### **Section 2 - Waste Generation and Composition**

2.1 Population.....	9
2.2 Employment.....	9
2.3 Waste Generation.....	14
2.3.1 Previous Waste Generation Quantities.....	14
2.3.2 Current Waste Generation Quantities.....	14
2.3.3 Generation Rates.....	15
2.3.4 Waste Quantity Projections.....	16
2.4 Waste Composition.....	19
2.4.1 1990 Waste Composition Analysis.....	19
2.4.2 1994 Waste Stream Characterization Study.....	19
2.4.3 Waste Composition by Generator Category.....	19
2.4.4 Comparison Between DuPage County and National Average Waste Streams.....	20
2.4.5 Recyclable Materials.....	24

### **Section 3 - Changes in State and Federal Legislation**

3.1 Illinois Solid Waste Management Statutory Authority.....	27
3.2 1991 to 1996.....	36
3.3 Proposed Legislative Changes.....	45
3.3.1 Landfill Surcharge Conversion Ratio.....	45
3.3.2 Solid Waste Facility Surcharge and Planning Grants.....	46
3.3.3 "Clean C&D Debris" as Defined in the Illinois Environmental Protection Act.....	47
3.3.4 Household Hazardous Waste Fund.....	48
3.3.5 Federal Legislation Pertaining to Solid Waste Management Franchising.....	48
3.3.6 Municipal Waste Flow Control.....	49

### **Section 4 - Solid Waste System**

4.1 Source Reduction and Reuse.....	51
4.2 Recycling.....	54
4.2.1 Residential Recycling.....	55

4.2.3	Public Sector Recycling.....	73
4.2.4	General Recycling.....	76
4.3	Construction and Demolition.....	76
4.4	Landscape Waste Management.....	82
4.4.1	Public Education.....	83
4.4.2	Landscape Waste Disposal Capacity.....	84
4.5	Household Hazardous Waste.....	86
4.5.1	Overall Program.....	86
4.5.2	HHW Education Program.....	87
4.5.3	HHW Diversion and Re-Use Program.....	91
4.5.4	HHW Collection Programs.....	92
4.6	Waste-To-Energy.....	97
4.6.1	Waste-To-Energy as a Disposal Option.....	97
4.6.2	Waste-To Energy Legislation.....	99
4.7	Landfilling.....	99
4.8	Sludge Management.....	106
4.9	Waste Hauling and Transfer Stations.....	106
4.10	Emerging Technologies.....	111
4.10.1	Landfill Technologies.....	111
4.11	Enforcement/Inspections.....	112
4.12	Land Banking.....	114

**APPENDICES**

A.	Document Summaries (Publications 1991- 1996).....	116
B.	Exhibits 4-1 through 4-9 from the <i>Waste Stream Characterization For DuPage County, Illinois, February, 1995</i> .....	120

**TABLES**

2-1	DuPage County Population Projections (by municipalities): 1990 - 2015.....	10
2-2	DuPage County Population/Household Projections: 1990 - 2015.....	11
2-3	DuPage County Population Projections (by townships): 1990 - 2015.....	12
2-4	DuPage County Employment Projections (by townships): 1990 - 2015.....	13
2-5	DuPage County Employment Projections (by year): 1990 - 2015.....	13
2-6	1990 Waste Generation Quantities.....	14
2-7	1990 Waste Generation Estimates (by year).....	14
2-8	1994 Municipal Waste Generation Rates.....	16
2-9	20-Year Waste Generation Estimates For DuPage County.....	18
2-10	Largest Generator For Each Waste Component.....	20
4-1	C & D Components Deposited at DuPage County Landfills.....	77
4-2	Amounts Collected at IEPA One-Day Events Held in DuPage County From 1990 - 1995.....	94

4-2	Amounts Collected at IEPA One-Day Events Held in DuPage County From 1990 - 1995.....	94
4-3	Inspections Performed in the Years 1991 - 1994.....	113

**CHARTS**

2-1	Summary of Waste Composition Percentages by Waste Component and Generator Category.....	21
2-2	Summary of Waste Composition Percentages by Waste Component.....	22
2-3(A)	Disposal Composition Comparison (DuPage County).....	23
2-3(B)	Disposal Composition Comparison (National Average).....	23
2-4	Summary of Readily Recyclable Waste in Tons by Waste Component and Generator Category.....	25
4-1	Cubic Yards of Waste Disposed and Remaining Capacity at DuPage County Landfills in 1994.....	102

**MAPS**

4-A	Region 2 - 1994 Active Non-Hazardous Solid Waste Landfills.....	104
4-B	Region 3 - Spoon Ridge (Gallatin) Landfill.....	105

***SECTION 1 - EXECUTIVE SUMMARY***

## **1.1 EXECUTIVE SUMMARY**

### ***Mission Statement***

The main goal outlined in the 1996 update to the DuPage County Solid Waste Management Plan is to minimize to the extent possible, the total amount of municipal solid waste that is generated within the County and then to recycle as much as possible. It will be the goal of the DuPage County Solid Waste Department, utilizing its household hazardous waste education and collection programs, to remove as many of the toxic constituents from the waste stream as possible, prior to the waste being transported by private haulers beyond the borders of DuPage County for processing or final disposal.

### ***Introduction***

The Illinois Solid Waste Planning and Recycling Act [415 ILCS 15/1 et seq.] provided DuPage County with the primary responsibility to plan for the management of municipal waste within its boundaries, identify waste reduction and recycling operations as preferable to land disposal, encourage solid waste planning on a regional basis, provide incentives for decreasing waste, and requiring counties to develop and implement plans with a time line based on the county's population. The Solid Waste Plan must provide for 15% waste reduction by the third year and 25% reduction by the fifth year. Counties were charged with implementing the Solid Waste Plan and may enlist the help of municipalities and private entities in its implementation.

The first comprehensive Solid Waste Management Plan for DuPage County was developed in 1990 and was approved in February 1991. The State of Illinois requires that the Solid Waste Management Plan be updated every five years. The original plan is hereafter referred to as Plan-1991. The first update to the plan is hereafter referred to as Plan-1996 and is contained in two volumes.

There are fifty-two specific action items in Plan-1991. The body of this document addresses each action item. Any action items recommended for deletion have been listed at the beginning of each section and appropriately labeled.

After each action item, a note has been added indicating that it is new, existing, or that it has been revised. Action items from the original Plan-1991 are followed by a "status" section to summarize pertinent accomplishments during the past five years, as well as a "recommendation" section. The original number of each action item from Plan-1991 is listed for existing or revised statements for cross-referencing purposes.

### ***Obligations Under the Original 1991 Plan***

Unless specifically amended under Plan-1996, all of the original obligations imposed upon DuPage County under Plan-1991 remain. Plan-1996 is intended to build upon the planning and implementation basis provided by Plan-1991. Plan-1991 presents and evaluates various options available to satisfy anticipated waste disposal needs in the future. The stated purposes of Plan-1991 is

to provide options for long-term solid waste disposal in an environmentally sound and cost-effective manner for residents of DuPage County.

Plan-1991 depicts a three-phase approach for the County's proposed solid waste management system:

***Phase I***

Phase I is characterized by waste reduction activities including source reduction, waste prevention, and pollution abatement. The first two components seek to prevent the creation of waste and precede the actual production of waste. The third component is an attempt to differentiate problematic materials and also minimize their production and use. Plan-1991 estimates that these activities, when fully implemented, would reduce the total waste quantity by 33%.

***Phase II***

Waste remaining after the source separation activities in Phase I would be routed to a materials recovery facility which would remove and recover additional materials from a mixed waste stream. The purpose for the facility is to remove certain materials which are not conducive to or desired in Phase III processes or disposal facilities as well as to recover recyclable materials from the waste which are not source-separated in Phase I. It is estimated that Phase II activities would remove an additional 7% of the waste stream. DuPage County has not built nor selected a Phase II technology.

***Phase III***

Waste remaining after the materials recovery by mixed waste processing in Phase II could be further processed or sent to a landfill for final disposal. Phase III activities might include combustion or non-combustion technologies that can be used to recover energy in the remaining waste prior to disposal or, perhaps, other useable products (i.e., compost). Additionally, some materials currently considered a residue to be landfilled might be reusable. For instance, combustion ash might be useable as a building material aggregate. Phase III might include a combination of all of the available options and use either existing or new facilities. DuPage County has not built nor selected a Phase III technology.

Plan-1996 anticipates that DuPage County will not necessarily be choosing a Phase II or III technology, relying instead on the private sector to construct or utilize appropriate technology. If the waste processing or disposal methods chosen by the private sector are determined by the County to not be environmentally sound or cost effective, the County has the responsibility and reserves the right to facilitate or implement appropriate solutions from the Phase II and III discussion in Plan-1991. In any case, the County is obligated by law to maintain oversight procedures to assure its citizens safe disposal of their waste at the lowest cost possible. Plan-1996 encourages and anticipates public/private cooperation as appropriate.

### ***Waste Disposal***

There are two remaining active landfills within DuPage County located on the property owned by the Forest Preserve District of DuPage County DuPage Forest Preserve District property. Both landfills are operated by private contractors. In 1992 a consent decree was issued which ordered both of the remaining landfills within the County to close by no later than December 31, 2000. The Greene Valley Landfill is expected to close in July 1996 and the Mallard Lake Landfill is expected to close in 1998. Use of the two landfills has been the primary method of solid waste disposal for waste generated in the County. State law 70 ILCS 805/18.6c. prohibits the development or operation of any new pollution control facilities, i.e. landfills, incinerators, composting facilities, on Forest Preserve District property. The law also prohibits sale of Forest Preserve District property to any other party that would construct, expand or operate a solid waste management facility.

In 1994, staff utilized the County's geographic information system to create a map which identified remaining potential search areas in the County for siting solid waste management facilities. The computer-generated map graphically displayed, by a process of elimination, those areas available in the County after applying a 1,000 foot setback requirement from properties zoned for primarily residential use; a 10,000 foot setback from airports required for landfills; and the exclusion of Forest Preserve District properties consistent with State law 70 ILCS 805/18.6c. The map generally indicates that once the setbacks are applied and Forest Preserve District property is excluded, there is little land currently available in the County to develop a landfill large enough to economically or environmentally justify development. Additionally, due to a high population density throughout the County, development of a new landfill in DuPage County would be expected to meet significant public opposition.

Though the 1994 siting map indicates there are search areas that may provide sites large enough for various resource recovery facilities including waste-to-energy incinerators, public support to date has been negligible. During public meetings held in November and December of 1995 to gather comments prior to drafting the update to the Solid Waste Plan, only two comments were received that were favorable to waste-to-energy technology. But even those comments were based on siting the incinerator outside the boundaries of DuPage County.

Additionally, with the repeal of the Retail Rate Law by Public Act 89-448 enacted March 14, 1996, the development of new waste-to-energy facilities has become more uncertain. The Retail Rate Law would have required commercial power companies to purchase electricity from incinerators at the retail, rather than the wholesale rate. Public funds would have made up the difference in electrical rates. Repeal of the Retail Rate Law may cause a delay in the construction of the Summit-McCook and McCook Co-generation facilities. However, developers of the waste-to-energy facility being constructed in the Village of Robbins in Cook County have announced they will finish construction and start accepting waste in December 1996.

There has been some interest by private companies to establish solid waste composting facilities in the County but they have been largely focused on small 50 to 100 ton per day demonstration facilities.

DuPage County will not be developing any new landfills or resource recovery facilities at this time. The private sector may consider building such facilities in the future.

### ***Transfer Stations***

Since it does not appear additional waste disposal capacity will be developed within DuPage County during the next few years, waste generated within the County will need to be transported outside its boundaries for disposal purposes once both remaining landfills close or no later than December 31, 2000. Transporting municipal solid waste greater than about 30 miles becomes uneconomical in a typical rear-loading compactor truck.

Consolidating waste at a transfer station could be a more economical solution for DuPage County. At a transfer station, waste from smaller compactor trucks are transferred to larger trucks or railroad cars for final transport to a disposal site outside the County creating lower per unit transportation costs. Use of transfer stations also allows the operator an opportunity to access more landfill sites in order to take advantage of more competitive disposal rates. The ultimate effect of the County having some transfer station capacity would be lower waste transportation and disposal costs for longer distance hauling. Without transfer stations, waste transportation and disposal costs will be even greater as the two landfills close.

Additionally, local hosts of a transfer station would be able to negotiate significant host community or affected area compensation fees. Indeed, the Village of Carol Stream has been paid a total of over \$370,000 since 1991 for having hosted the County's Intermediate Recyclables Processing Facility. A new transfer station to be constructed in Melrose Park, in Cook County, is projected to provide about \$20 million to the community over a twenty year period.

DuPage County could be serviced best by the private development of three to five waste transfer stations depending on location and processing capacity. Support for transfer stations is likely once the Greene Valley Landfill closes in July 1996 and expected increases of a minimum of 25% are realized for waste transportation and disposal.

### ***Waste Reduction and Recycling***

Since the most environmentally benign method to dispose of waste may be to not generate certain wastes in the first place, the County will be emphasizing waste reduction education activities. Results of a waste characterization study at both landfills in 1994 indicate that the majority of materials generated in DuPage County that were being landfilled and were considered recyclable were coming from small to medium sized businesses. The County will be focusing on voluntary waste reduction and recycling education programs for different types and sizes of businesses.

Additionally, certain types of waste materials are also expensive to transport long distances even via transfer stations. Construction and demolition debris tends to be exceptionally heavy in the case of mineral based materials (i.e., brick, concrete, and asphalt) or characterized by substantial airspace (i.e., uncompacted wood). The 1994 landfill study indicated that construction and demolition

materials accounted for about one-third of all wastes DuPage County generators were depositing in the landfills. The County will emphasize a multi-faceted public education program to decrease the amount of all wastes generated and recycling of new categories of materials such as construction and demolition debris.

### ***Toxicity Reduction***

The United States Environmental Protection Agency has estimated that household quantities of hazardous wastes constitute 0.5% of the entire municipal solid waste stream. Yet household hazardous waste (HHW) may represent a large portion of the environmental threat from disposal of municipal solid waste in landfills. Removal of HHW from the waste stream is expected to further reduce future landfill cleanup liability as well as reduce the contamination threat of additional processing at resource recovery facilities including incinerators and composters. The County will be initiating a public education program and a mobile household hazardous waste collection program to provide more convenient service to residents not served by the City of Naperville permanent collection facility.

### ***Flow Control***

Finally, due to recent United States Supreme Court decisions, adoption of an ordinance requiring private waste haulers to deliver wastes to a particular waste processing or storage facility in order to guarantee a minimum of tipping fee revenue to meet debt service, has been deemed unconstitutional under the Interstate Commerce Clause. All thirty-three municipalities in the County have franchised waste and recyclables hauling via contracts with the private sector. It is currently believed that the municipalities retain the right to direct their waste hauler to a particular processing or disposal facility as a requirement of the franchise agreement without violating the Interstate Commerce Clause of the United States Constitution.

Municipalities within the County have consistently requested that the County not supersede their ability to control the flow of waste. Since the County will not itself be actively pursuing development of any facility that will require flow control, this may only become an issue at transfer stations that may be developed. An advantage may be to expect private haulers to assume all responsibility for final disposal of waste generated within DuPage County releasing all local governmental entities from responsible party status.

## **1.2 BACKGROUND AND REVIEW PROCESS**

The first comprehensive Solid Waste Management Plan for DuPage County was developed in 1990 and was approved by the Illinois Environmental Protection Agency in February 1991. State law requires that the plan be updated every five years. Hereafter, the 1996 five-year update to the Solid Waste Plan will be referred to as Plan-1996.

Prior to development of Plan-1996, a series of seven public input meetings were conducted to obtain comments regarding the original Solid Waste Plan as well as comments pertaining to new issues. One meeting was held in each of the County Board Districts as well as one meeting specific

to the waste hauling industry. Minutes were prepared from each of the meetings and reviewed by members of the DuPage County Solid Waste Committee prior to development of Plan-1996.

### **1.3 ADMINISTRATIVE FUNCTIONS**

The DuPage County Solid Waste Committee is composed of twelve members, six are County Board members and six municipal representatives. The Committee is chaired by a County Board member and the vice-chair is a municipal member. The County Board Chairman appoints the municipal representatives who are recommended by the DuPage Mayors and Managers Conference. The term for municipal members to the Solid Waste Committee is three years. The DuPage County Solid Waste Department serves as staff to the Committee. The Department manages the contracts for the County's Intermediate Processing Facility for recyclables in the Village of Carol Stream, the Solid Waste Education Center, the mobile household hazardous waste education and collection program, and the County's landfill and illegal dumping inspection program. The Department is also responsible for implementing the Solid Waste Plan along with the update(s).

**SECTION 2 -  
WASTE GENERATION AND COMPOSITION**

## 2.1 POPULATION

Plan-1991 was based upon 1980 Census Bureau data and year 2010 population projections developed by the DuPage County Planning Department (Plan-1991, pg. 2-1). Projections for DuPage County's population for 1990 was estimated to be 813,806, an increase of over 23% in a ten-year period (from 1980 to 1990). In addition, the population was projected to increase another 6% to approximately 922,631 people by the year 2000.

Present data from the DuPage County Planning Department (Planning Department) indicates that DuPage County is growing slightly less than originally projected in Plan-1991. According to the 1990 U.S. Census, estimates showed that DuPage County had a total population of 781,666, an increase of 19% in a ten-year period (from 1980 to 1990).

Table 2-1 (see pg.10 ) presents 1990 Census figures for DuPage County's population, number of households, and an estimated population figure for 1992. This is the only data available at this time that makes the distinction between the individual municipalities and the unincorporated township regions.

Since 1992, DuPage County's population has increased at an average annual rate of 2% (see Table 2-2, pg. 11). By 2015 it has been estimated that there will be 232,063 single-family households and 135,532 multiple-family households. Based on the data from Table 2-3 (see pg. 12), the Planning Department projects that by the year 2015 the nine townships that make up DuPage County will have a total of 367,596 households with a total population of 1,013,721 people. These projections are based upon a five-year growth rate of 2.85%.

## 2.2 EMPLOYMENT

Plan-1991 was based upon employment statistics provided by the Planning Department. In 1985, there were 376,630 people employed by firms located within the County. Projections made at that time showed a 10.4% increase to 415,857 by 1990 (Plan-1991, pg. 2-4).

Table 2-4 (see pg. 13) illustrates current predictions made by the Planning Department with regards to employment rates through year 2015 for each of the nine township regions that embody DuPage County.

During the last ten years the number of people currently employed by firms within DuPage County has increased significantly more than the population. In 1990, the employment rate increased 29% to 496,216, instead of to the 10.4% increase projected in 1985. This growth is expected to steadily continue well into the future.

Additional projections developed by the Planning Department (see Table 2-5, pg. 13) indicate that since 1990 (with the exception of 1992 employment figures which decreased by 2.0%), the employment rate has increased at an average annual rate of 2.75%. By the year 2015, the County will have a projected employment level of 746,730 which represents a five-year growth rate of 4.83%. Employment statistics continue to provide valuable information needed to track commercial waste generated within the County.

TABLE 2-1

DuPage County Population Projections: 1990-2015

Municipality	1990 Census Population	1990 Census Households	1992 Estimated Population
ADDISON	32,058	10,722	32,490
AURORA *	14,811	5,430	19,127 **
BARTLETT *	12,086	3,546	14,658 **
BENSENVILLE	17,767	6,537	17,611
BLOOMINGDALE	16,614	5,838	19,199
BOLINGBROOK *	1,472	391	1,496 **
BURR RIDGE *	4,596	1,424	4,971 **
CAROL STREAM	31,716	11,333	35,115
CLARENDON HILLS	6,994	2,734	7,000
DARIEN	18,341	6,520	19,053
DOWNERS GROVE	46,858	17,660	47,883
ELMHURST	42,029	15,135	42,507
GLEN ELLYN	24,944	9,413	25,371
GLENDALE HGTS.	27,973	9,613	29,020
HANOVER PARK *	14,233	4,556	14,924 **
HINSDALE *	13,956	5,217	16,322 **
ITASCA	6,947	2,451	7,154
LISLE	19,512	7,833	20,343
LOMBARD	39,408	15,046	40,234
NAPERVILLE *	72,931	25,537	78,561 **
OAK BROOK	9,178	2,966	9,354
OAKBROOK TERAC.	1,907	789	1,982
ROSELLE *	17,499	5,865	17,890 **
ST. CHARLES *	10	3	10 **
VILLA PARK	22,253	8,018	22,185
WARRENVILLE	11,333	4,028	11,389
WAYNE *	718	238	810 **
WEST CHICAGO	14,796	4,652	15,481
WESTMONT	21,228	8,872	21,769
WHEATON	51,464	17,770	53,757
WILLOWBROOK	8,598	3,854	8,690
WINFIELD	7,096	2,406	7,656
WOOD DALE	12,425	4,549	12,691
WOODRIDGE *	26,232	9,614	27,206 **
<b>UNINCORPORATED</b>			
ADDISON	7,507	2,436	N/A
BLOOMINGDALE	10,017	3,243	N/A
DOWNERS GROVE	26,253	9,454	N/A
LISLE	16,126	5,887	N/A
MILTON	23,198	7,579	N/A
NAPERVILLE	4,438	1,563	N/A
WAYNE	4,956	1,574	N/A
WINFIELD	7,157	2,278	N/A
YORK	12,031	4,770	N/A
<b>TOTAL</b>	<b>781,666</b>	<b>279,344</b>	<b>703,909</b>

Source: 1990 U.S. Census, DuPage County Development Department, November 1994.

Note: All forecasts are preliminary.

\* Municipalities not wholly within DuPage County

\*\* DuPage County portions only

N/A = Data Not Available

**TABLE 2-2**  
**DuPage County Population/Household Projections: 1990-2015**

YEAR	POPULATION		ANNUAL CHANGE		PERCENT CHANGE		TOTALS			HOUSEHOLDS		ANNUAL CHANGE		PERCENT CHANGE		TOTALS		
	Single-family	Multi-family	Single-family	Multi-family	Single-family	Multi-family	Population	Annual Change	Percent Change	Single-family	Multi-family	Single-family	Multi-family	Single-family	Multi-family	Households	Annual Change	Percent Change
1990	575,999	201,667	N/A	N/A	N/A	N/A	781,666	5,666	0.70	181,778	97,566	N/A	N/A	N/A	N/A	279,344	N/A	N/A
1991	592,761	206,104	12,762	4,437	2.10	2.20	798,865	17,199	2.20	185,841	99,747	4,063	2,181	2.20	2.20	285,588	6,244	2.20
1992	605,563	210,555	12,800	4,451	2.10	2.10	816,116	17,251	2.20	189,854	101,901	4,013	2,154	2.10	2.10	291,755	6,167	2.10
1993	616,850	214,480	11,289	3,925	1.80	1.80	831,330	15,214	1.90	193,393	103,801	3,539	1,900	1.80	1.80	297,194	5,439	1.80
1994	625,559	217,508	8,709	3,028	1.40	1.40	843,067	11,737	1.40	196,124	105,267	2,731	1,466	1.40	1.40	301,390	4,196	1.40
1995	631,084	226,399	5,525	8,891	9.00	3.90	857,480	75,814	9.70	198,650	109,670	2,526	4,403	1.30	4.00	308,320	6,930	2.20
2000	664,163	246,461	33,079	20,062	4.90	8.10	910,620	53,140	6.20	208,899	119,671	10,249	10,001	4.90	8.40	328,570	20,250	6.20
2005	690,632	264,068	26,469	17,607	3.80	6.70	954,700	44,080	4.84	217,134	128,436	8,235	8,765	3.90	6.80	345,570	17,000	4.90
2010	716,168	269,458	25,536	5,390	3.60	2.00	985,630	30,930	3.24	225,045	131,193	7,911	2,757	3.60	2.10	356,238	10,668	3.00
2015	736,409	277,311	20,241	7,853	2.70	2.80	1,013,720	28,090	2.85	232,063	135,532	7,018	4,339	3.00	3.20	367,595	11,357	3.00

Source: 1990 U.S. Census, DuPage County Development Department, November 1994.

Note: 2015 projections are based on extrapolations of the previous periods - Sept. 1995.

N/A = Data Not Available

TABLE 2-3  
DuPage County Population Projections: 1990-2015

Townships	1990		1995		2000		2005		2010		2015	
	Population	Households	Population	Households								
Wayne	40,379	12,643	60,176	19,019	68,806	21,794	76,047	24,099	82,192	26,001	89,309	28,266
Bloomingtondale	96,050	32,637	110,443	37,809	114,735	39,482	117,626	40,539	120,896	41,504	124,607	42,844
Addison	82,727	28,577	86,361	29,925	87,714	30,441	88,750	30,819	89,626	31,098	90,221	31,323
Winfield	37,969	12,573	40,124	13,505	44,814	15,255	48,777	16,813	51,331	17,627	53,331	18,546
Milton	108,148	38,430	112,869	41,251	116,668	42,750	119,523	43,907	121,705	44,701	122,153	44,979
York	120,546	45,270	122,863	46,731	127,640	49,053	129,417	49,776	133,343	51,411	133,811	51,633
Naperville	49,533	18,901	62,129	23,261	75,200	28,457	92,478	35,679	98,968	38,200	109,482	43,101
Lisle	108,452	38,643	116,018	41,892	120,060	43,245	123,384	44,494	125,423	45,109	126,584	45,580
Downers Grove - N	127,912	48,220	134,479	50,852	138,800	52,499	140,645	53,188	142,645	53,819	142,732	53,843
Downers Grove - S	9,950	3,450	12,019	4,123	16,187	5,594	18,053	6,256	19,496	6,768	21,491	7,463
<b>TOTAL</b>	<b>781,666</b>	<b>279,344</b>	<b>857,481</b>	<b>308,368</b>	<b>910,624</b>	<b>328,570</b>	<b>954,700</b>	<b>345,570</b>	<b>985,626</b>	<b>356,238</b>	<b>1,013,721</b>	<b>367,596</b>

Source: 1990 U.S. Census, DuPage County Development Department, November 1994.

Notes: All forecasts are preliminary.

2015 projections are based on extrapolations of the previous periods - 9/11/95.

\* Population - Includes municipalities and the unincorporated township zones.

\*\* Households - Domestic establishments occupied by members of a family.

TABLE 2-4

## DuPage County Employment Projections: 1990-2015

Townships	1990	1995	2000	2005	2010	2015
Wayne	7,310	10,403	15,940	18,814	20,047	24,135
Bloomington	40,667	54,941	72,892	84,660	93,962	107,930
Addison	101,348	110,290	118,419	120,818	126,850	131,105
Winfield	18,401	19,608	20,512	24,155	25,068	26,331
Milton	51,005	55,685	59,924	60,521	61,476	64,039
York	123,009	128,818	135,660	139,996	144,054	147,036
Naperville	39,029	47,316	56,764	76,253	92,380	100,811
Lisle	55,590	59,650	64,611	68,534	72,149	75,048
Downers Grove - N	54,505	58,881	59,118	61,327	63,011	63,991
Downers Grove - S	5,352	6,208	8,061	10,721	13,301	14,531
<b>TOTAL</b>	<b>496,216</b>	<b>549,800</b>	<b>611,901</b>	<b>665,799</b>	<b>712,298</b>	<b>754,957</b>

Source: 1990 U.S. Census, DuPage County Development Department, November 1994.

Notes: All forecasts are preliminary.

2015 projections are based on extrapolations of the previous periods - 9/11/95.

TABLE 2-5

## DuPage County Employment Projections: 1990-2015

YEAR	EMPLOYMENT	ANNUAL CHANGE	PERCENT CHANGE
1990	497,120	29,108	6.22
1991	497,660	540	0.11
1992	487,724	-9,936	-2.00
1993 *	507,595	19,871	4.07
1994 *	528,276	20,681	4.00
1995 **	549,800	21,524	4.07
2000	611,900	62,100	11.30
2005	665,800	53,900	8.81
2010	712,300	46,500	6.98
2015	746,730	34,430	4.83

Source: 1990 U.S. Census, DuPage County Development Department, November 1994.

Notes: \* Extrapolated figures, September 1995

\*\* Development Department Projections, November 1994

## 2.3 WASTE GENERATION

### 2.3.1 Previous Waste Generation Quantities

Plan-1991 (pg. 4-8), estimates that DuPage County generated 1,140,625 tons of municipal waste in 1990. This municipal waste stream comprises residential (combined single-family and multi-family residences), commercial/industrial/institutional and construction/demolition wastes. A break down of the 1990 waste generation quantities on a per capita basis is provided below.

Residential	3.5 lbs/capita/day
Commercial/Industrial/Institutional	2.2 lbs/capita/day
Construction/Demolition	<u>2.3 lbs/capita/day</u>
	8.0 lbs/capita/day

According to Table 4-4 (Plan-1991, pg. 4-8), the United States Environmental Protection Agency's (U.S. EPA's) national average annual waste generation rate of 1% was used to project the increase of waste generation for the period from 1990 through 2010. Plan-1991 estimates that waste generation rates will continue to increase for residential, commercial/industrial/ institutional wastes; however, construction and demolition (C & D) wastes will not increase but remain constant. Plan-1991 provided the following waste generation estimates for DuPage County for a 20-year planning period:

YEAR	POPULATION	PER CAPITA GENERATION (LBS)	TONS OF WASTE PER DAY	GENERATED PER YEAR
1990	781,200	8.0	3,125	1,140,625
1995	847,000	8.3	3,518	1,284,070
2000	901,178	8.6	3,875	1,414,375
2005	936,300	8.9	4,166	1,520,590
2010	985,000	9.3	4,580	1,671,700

### 2.3.2 Current Waste Generation Quantities

DuPage County's local waste generation data is very limited due to privatized collection and disposal practices and the lack of legislation requiring private enterprise to supply this data (through contracts). Therefore, in order to prepare estimated waste generation rates

for Plan-1996, preparers have elected to use a combination of available local data and supplemental data from national statistics.

The *DuPage County 1994 Waste To Date Annual Report* (December 1995) provided waste generation estimates primarily based upon data reported to the Solid Waste Department from various sources including municipalities, townships, waste haulers, and recycling service providers. However, most waste generation data for the multi-family units, commercial, C & D sectors, and a small portion of the single-family units was not reported. Therefore, the County has extrapolated figures for those areas.

Upon analysis of this information, the residential waste generation tonnages from the *DuPage County 1994 Waste To Date Annual Report* were used to calculate the 1994 waste generation rates documented in Table 2-8 (see pg. 16).

The *Waste Stream Characterization for DuPage County, February, 17, 1995, (Waste Stream Characterization Study)* provided waste discard estimates based on a one-week waste survey performed by SCS Engineers (Ohio) at the two landfill sites in the County.

Having no other available local source to rely upon for waste generation data, the commercial/industrial and construction/demolition waste discard tonnage estimates from this survey were utilized to calculate the 1994 waste generation rates documented in Table 2-8 (see pg. 16). Since little research has been conducted concerning waste diversion results, it is important to note the assumption that the discard estimates represent a majority of the waste generated.

### **2.3.3 Generation Rates**

In order to develop a total municipal waste generation rate for 1994, generation and discard tonnage estimates provided from the *DuPage County 1994 Waste To Date Annual Report* and the *Waste Stream Characterization for DuPage County, Illinois* were applied to population and employee statistics supplied by the Planning Department and the State of Illinois Department of Employment Security (see Table 2-8, pg. 16).

First, the annual tonnage figures were divided by the corresponding population or employment figures to create tons per capita per year (t/c/y) for the residential sector and the tons per employee per year (t/e/y) for the commercial/industrial and construction/demolition sectors. Next, the tons per year for each sector was converted to tons per day by dividing the individual sector's total by 365.25 (days per year).

Residential sector totals were converted from tons per capita per day (t/c/d) to pounds per capita per day (lbs/c/d) by multiplying the t/c/d totals by 2,000. However, the commercial/industrial and construction/demolition sectors which were refigured as tons per employee per day (t/e/d), need to be converted to pounds per employee per day (lbs/e/d). In order to accomplish this task, each sector's t/e/d was multiplied by 2,000.

To obtain unified lbs/c/d results for all sectors, the employment total of each non-residential sector was divided by the County's total population and then multiplied by the specific sector's lbs/e/d figure to derive a lbs/c/d figure.

Using the calculations described above results in a base waste generation rate estimate of 7.2 lbs/c/d for DuPage County (see Table 2-8 below).

**Table 2-8  
1994 Municipal Waste Generation Rates**

Sector	Population/ Employees	Tons Per Day	Tons Per Year	Annual Tonnages	Lbs./Capita/Day
Single-Family	625,559 Pop. <sup>1</sup>	.0022 t/c/d <sup>1</sup>	0.81 t/c/y	50,8201 <sup>3</sup>	4.45
Multi-Family	217,508 Pop. <sup>1</sup>	.0002 t/c/d	0.09 t/c/y	17,023 <sup>3</sup>	0.43
Commercial	343,550 Emp. <sup>2</sup>	.0015 t/e/d	0.53 t/e/y	182,795 <sup>4</sup>	1.19 <sup>5</sup>
Industrial	69,085 Emp. <sup>2</sup>	0.004 t/e/d	1.30 t/e/y	89,615 <sup>4</sup>	0.58 <sup>5</sup>
Construction/ Demolition	22,699 Emp. <sup>2</sup>	0.010 t/e/d	3.50 t/e/y	79,470 <sup>4</sup>	0.52 <sup>5</sup>
<b>Total Population</b>	<b>843,067 Pop.<sup>1</sup></b>				<b>7.17</b>

<sup>1</sup> 1994 Population figures provided by the DuPage County Development Department.

<sup>2</sup> 1994 Employment figures provided by the State of Illinois Department of Employment Security.

<sup>3</sup> Residential tonnage figures were derived from the "DuPage County 1994 Waste To Date Annual Report" and represent waste generation rates.

<sup>4</sup> Industry tonnages represent waste discard data derived from a waste sort conducted in 1994 that is documented in the February 17, 1995 "Waste Stream Characterization for DuPage County, Illinois."

<sup>5</sup> The conversion from lbs./employees/day to lbs./capita/day is calculated by dividing the employee total of a specified sector by the total County population and then multiplying by the specific sector's lbs./employee/day figure.

### 2.3.4 Waste Quantity Projections

Plan-1991 extracted an estimated base of 8.0 lbs/capita/day as the County's waste generation rate.

For purposes of forecasting future waste generation rates, the County utilized this base rate in conjunction with the U.S. EPA's estimate that on a national average the per capita waste generation rate will increase at a rate of 1% per year from the period of 1988 through 2010.

Consequently, the County's prediction about municipal waste generation rates increasing at an annual pounds per capita generation rate of 1% is reflected in the 20-year planning period of the 1990 waste generation estimates in Section 2.3.1. This also indicates the assumption made that the C & D component would hold constant and not increase over this planning period.

Table 2-8 (see pg. 16) summarizes the DuPage County municipal waste generation estimates for 1994. The revised municipal waste generation base rate is equal to 7.17 lbs/c/d. This rate is 5.8 % lower than the 1990 base rate of 8.0 lbs/c/d. This revised rate is comparable to other counties in the northeastern Illinois region (i.e. Cook County, 7.5 lbs/c/d; Kane County, 6.89 lbs/c/d; and Lake County, 7.28 lbs/c/d); but higher than the rate of Kendall County, 6.03 lbs/c/d; Will County, 5.7 lbs/c/d; and the statewide average of 6.5 lbs/c/d (IEPA's *Available Disposal Capacity for Solid Waste in Illinois Eighth Annual Report*, September, 1995).

The County's population has increased at an average of 2% per year. Although there is a strong correlation between an increase in population and an increase in municipal waste generation, waste disposal has decreased beyond this growth rate because of source reduction, recycling, and composting activities. The rate of declining municipal waste generation may be attributed to one or more of the following factors:

**FACTORS THAT MAY BE ATTRIBUTED TO DECLINING MUNICIPAL WASTE GENERATION**

- 1) Households implemented source reduction programs which generated less waste in 1994 than in 1990.
- 2) Previously manufactured products and packages were reused.
- 3) Products and packages were redesigned with reduced quantities of raw materials and increased quantities of recycled materials thereby, reducing volume at the source.
- 4) Households and businesses managed landscape waste through on-site composting and land application in response to the July 1, 1990, landfill ban, thus reducing the waste generation rate.
- 5) The municipal waste generation rate was not increasing at an annual rate of 1%.
- 6) The original waste generation rate of 8.0 lbs/c/d may have been overestimated.
- 7) A lack of accurate reporting.
- 8) Increased county-wide education on all aspects of waste reduction.

Table 2-9 below presents the County's projections of municipal waste for a 20-year planning period from 1994 through 2015. The projections are based upon the 1994 base generation rate of 7.17 lbs/c/d in association with the most currently available population forecasts provided by the Planning Department.

Also being utilized is the U.S. EPA's assumption that current source reduction activities will continue and their estimation that on a national average the per capita generation rate

will decrease 0.1 pounds per person over a seven-year period between 1993 and 2000 (*Characterization of Municipal Solid Waste in the United States - 1994 Update, Executive Summary*, November, 1994). When calculated, this figure equals a waste decrease rate of approx. -.0143 lbs/c/y. This rate has been applied to the 1994 base generation rate and to the adjusted generation rates through 2015 to produce prospective generation rates and tons of waste generated per year. To be consistent, preparers have extended the U.S. EPA's forecast to include the year 2015.

Based on data from the Planning Department, DuPage County's population will increase at an average rate of approximately 1% over the next twenty years. As mentioned previously, there is a strong correlation between increasing population and increasing waste generation. However, the County will continue to focus on source reduction and reuse aspects of waste reduction education and public awareness programs in an effort to further reduce waste generation. Therefore, utilizing the U.S. EPA's assumption as described above, it is estimated that the municipal waste generation rates will continue to slightly decrease over the next twenty years (see Table 2-9 below).

**TABLE 2-9**

**20-Year Waste Generation Estimates  
For DuPage County**

Year	Population <sub>1</sub>	Rate of Waste Decrease (lbs/capita/day) <sub>2,3</sub>	Adjusted Generation Rate (lbs/capita/day) <sub>4</sub>	Tons of Waste Generated per day	Tons of Waste Generated per year
1994	843,067		7.1622000	3,019.10	1,102,726.27
1995	857,480	0.0000391	7.1621609	3,070.70	1,121,574.95
2000	910,620	0.0000391	7.1619654	3,260.91	1,191,049.01
2005	954,700	0.0000391	7.1617699	3,418.67	1,248,669.53
2010	985,630	0.0000391	7.1615744	3,529.33	1,289,088.25
2015	1,013,720	0.0000391	7.1613789	3,629.82	1,325,790.48

<sub>1</sub> Population figures provided by the DuPage County Development Department.

<sub>2</sub> Rate of Waste Decrease, -0.0000391 is based on the EPA's estimated decline per capita generated per day from 4.4 pounds in 1993 to 4.3 pounds in 2000. (-.1 lbs/capita/7 years = -.0143 lbs/capita/year = -0.0000391 lbs/capita/day).

<sub>3</sub> Waste Generation Rates are assumed to continually decrease at an annual rate of -0.0000391 lbs/capita/day from 2001 through 2015 (based on DuPage County estimates).

<sub>4</sub> 1994 Base Generation Rate derived from the 1994 DuPage County Waste Generation Rates from Table 2.6.

## **2.4 WASTE COMPOSITION**

### **2.4.1 1990 Waste Composition Analysis**

During the development of Plan-1991, local municipal collection data alone was too limited to develop waste generation composition estimates for the County. Therefore, preparers of the report used a personal computer-based software program called WastePlan which is a modeling tool for use in integrated solid waste management planning. According to Plan-1991, the WastePlan program provides for the modeling of local solid waste management options based on national data.

WastePlan helped the County develop revised waste generation estimates and waste characterization for Plan-1991. The local information inputted to produce residential waste stream summary information included the 1990 DuPage County population projection (781,200) and the residential waste generation rate (3.5 lbs/capita/day). The local information inputted to produce the commercial waste stream summary information was supplied by the Planning Department.

### **2.4.2 1994 Waste Stream Characterization Study**

In December 1994, SCS Engineers conducted a waste stream characterization study for DuPage County. This study included a one-week waste survey of DuPage-generated waste disposed at each landfill in the County — Mallard Lake and Greene Valley. SCS Engineers produced waste composition results for each landfill using five generator categories: residential single-family, residential multi-family, non-residential, mixed, and construction and demolition (C & D) debris. Non-residential waste was primarily incoming loads of commercial and industrial wastes. Mixed waste was incoming loads of unknown or more than one type of waste. Exhibits 4-1 through 4-9 from the study (see Appendix B) present a summary of waste composition by generator category, disposal location (by each landfill and DuPage County), and waste component.

### **2.4.3 Waste Composition by Generator Category**

SCS Engineers provided an analysis of principal variations in waste composition across generator category. Chart 2-1 (see pg. 21) presents a summary of waste composition percentages by waste component and generator category. It shows that C & D waste is primarily from C & D/Industrial sources. Paper waste represents more than 40% of the waste composition within the commercial, multi-family, and single-family residential waste generator categories.

WASTE COMPONENT	GENERATOR
<b>Paper</b>	waste from commercial sources contains the most paper
<b>Organic</b>	waste from single-family residential sources contains the most organic materials
<b>Plastic</b>	waste from commercial sources contains the most plastic
<b>Yard</b>	residential single-family waste contains more grass/leaves yard waste
<b>C&amp;D/Industrial</b>	C & D/Industrial waste contains more construction and demolition material
<b>Metal</b>	waste from single-family residential sources contains the most metal
<b>Glass</b>	waste from multi-family residential sources contains the most glass
<b>Inorganic</b>	residential multi-family waste contains more inorganic waste
<b>HHW</b>	commercial waste contains more household hazardous waste

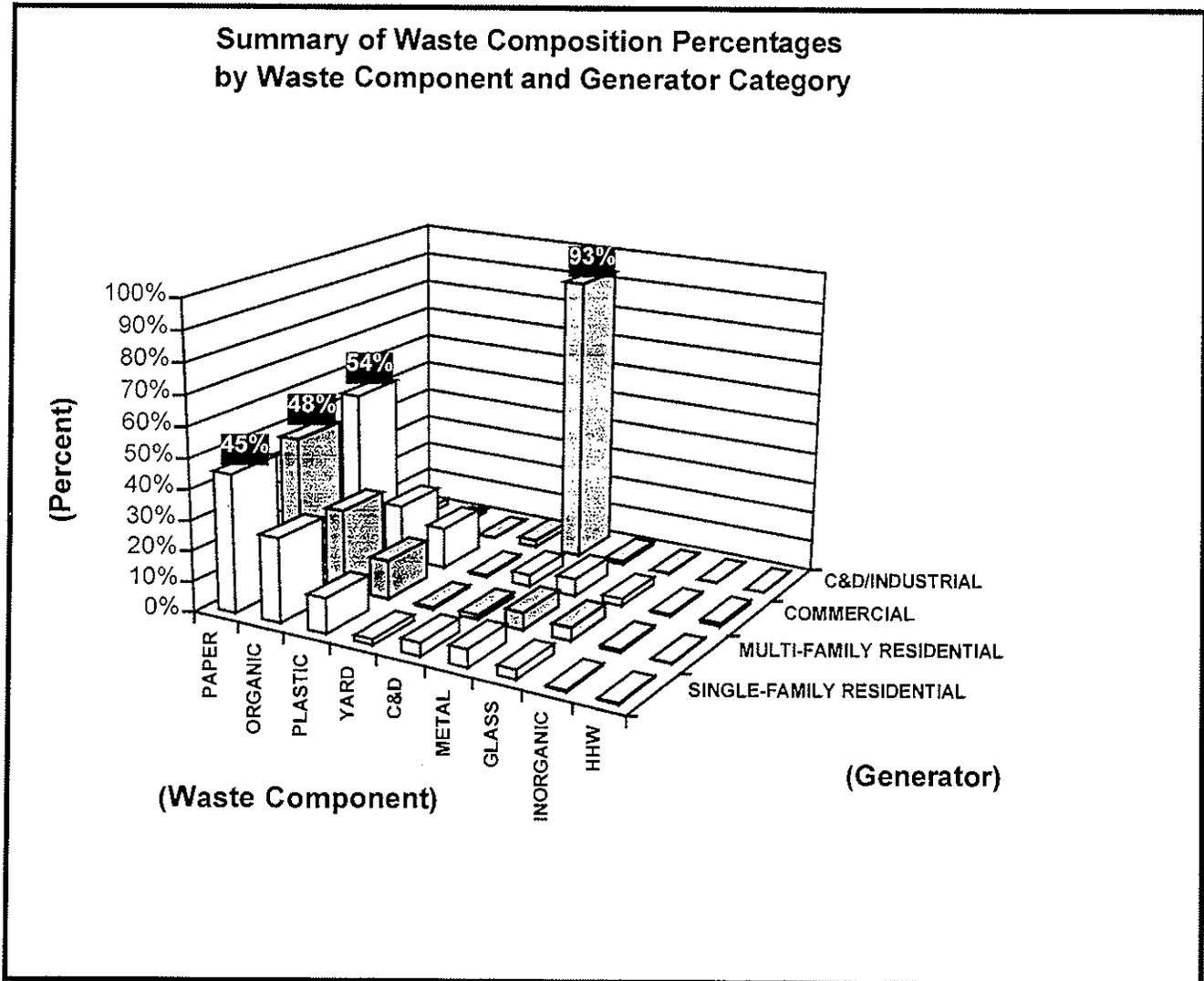
Chart 2-2 (see pg. 22) shows that C & D and paper represent the largest portions of the waste composition.

#### **2.4.4 Comparison Between DuPage County and National Average Waste Streams**

The pie charts in Chart 2-3 (A) and (B) (see pg. 23) illustrate a disposal composition comparison between the DuPage County waste stream (from the *Waste Stream Characterization Study*) and the national average (from the *U.S. EPA Characterization of Municipal Solid Waste in the United States: 1994 Update*). Since some variations exist between the two studies, such as definitions of the waste categories, this is not an exact comparison.

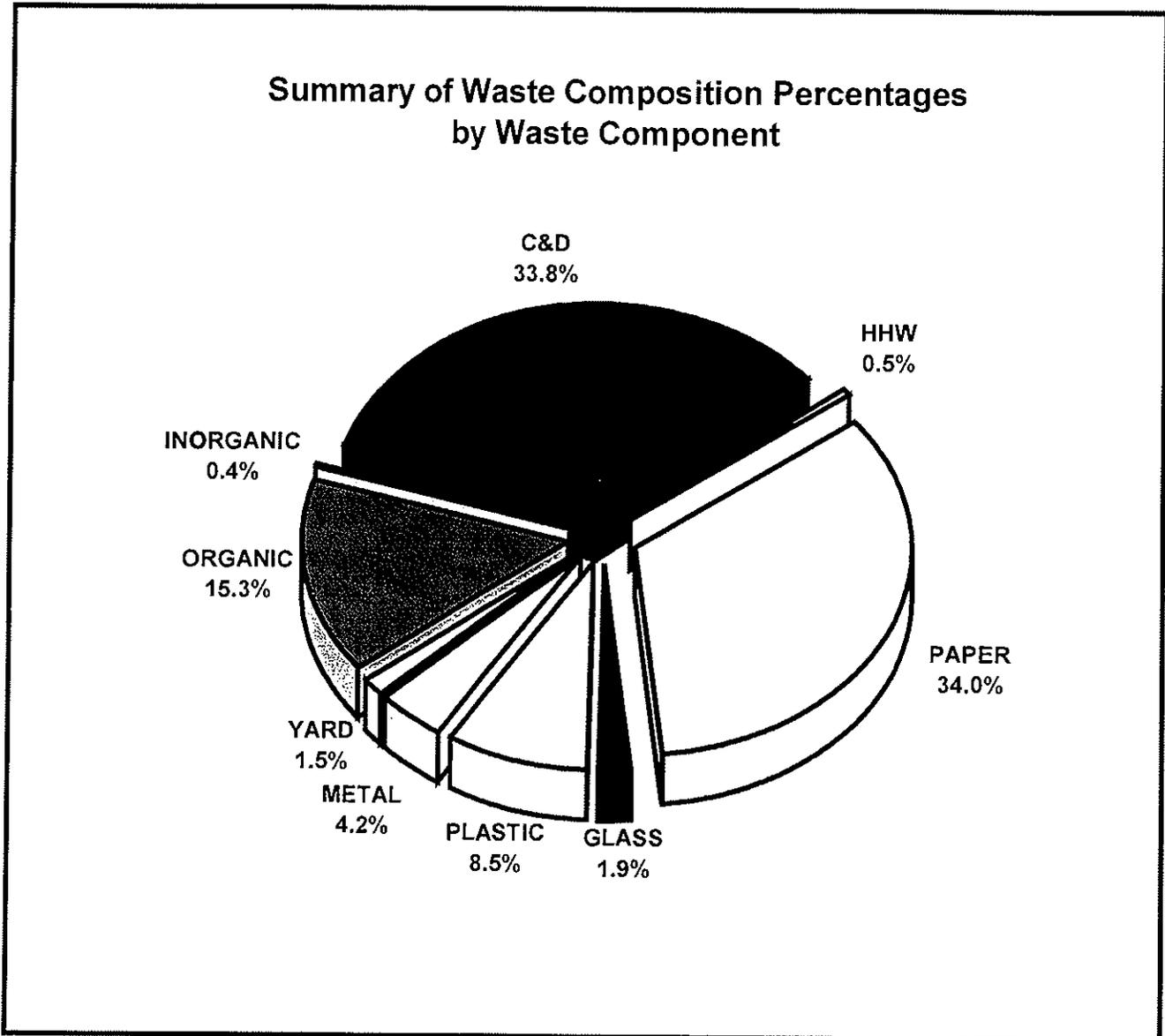
Of the eight categories shown, four categories (wood, metal, plastic, and other) are most comparable by percent of the waste stream. Significant differences are shown for paper and yard waste. The *Waste Stream Characterization Study* suggests that the DuPage percentage for yard waste is notably less than the national average due to the successful diversion of this material through the local yard waste ban.

CHART 2-1



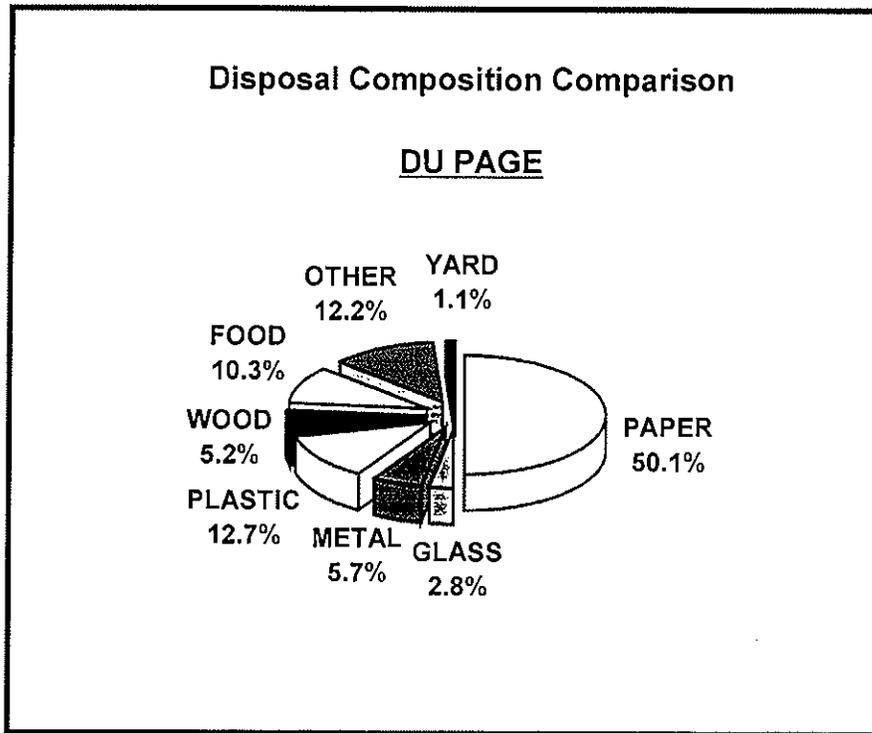
Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

CHART 2-2



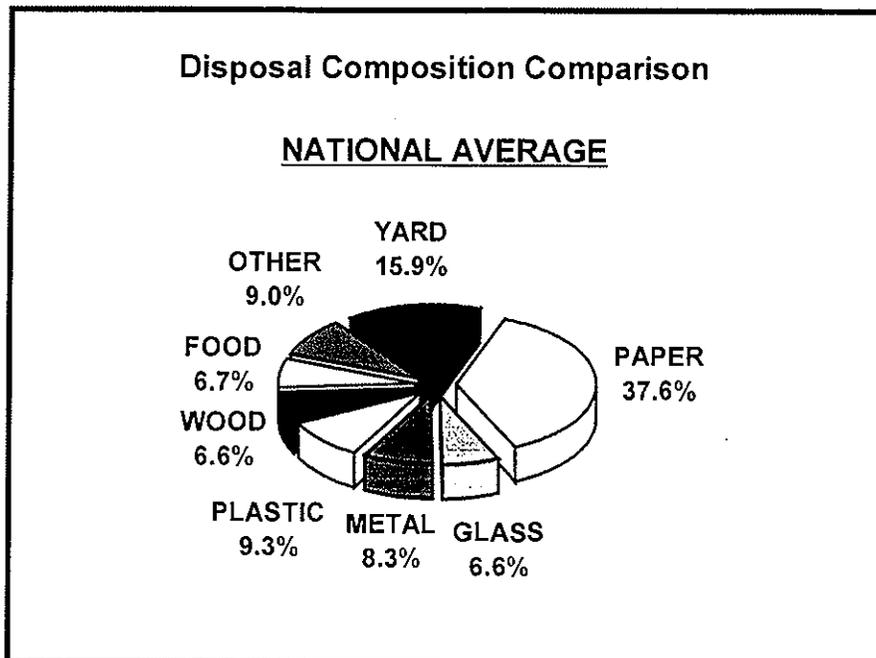
Source: *Waste Stream Characterization for DuPage County, Illinois, February 17, 1995*

CHART 2-3 (A)



Source: *Waste Stream Characterization for DuPage County, Illinois, February 17, 1995*

CHART 2-3 (B)



Source: *U.S. EPA Characterization of Municipal Solid Waste in the United States: 1994 Update*

**2.4.5 Recyclable Materials**

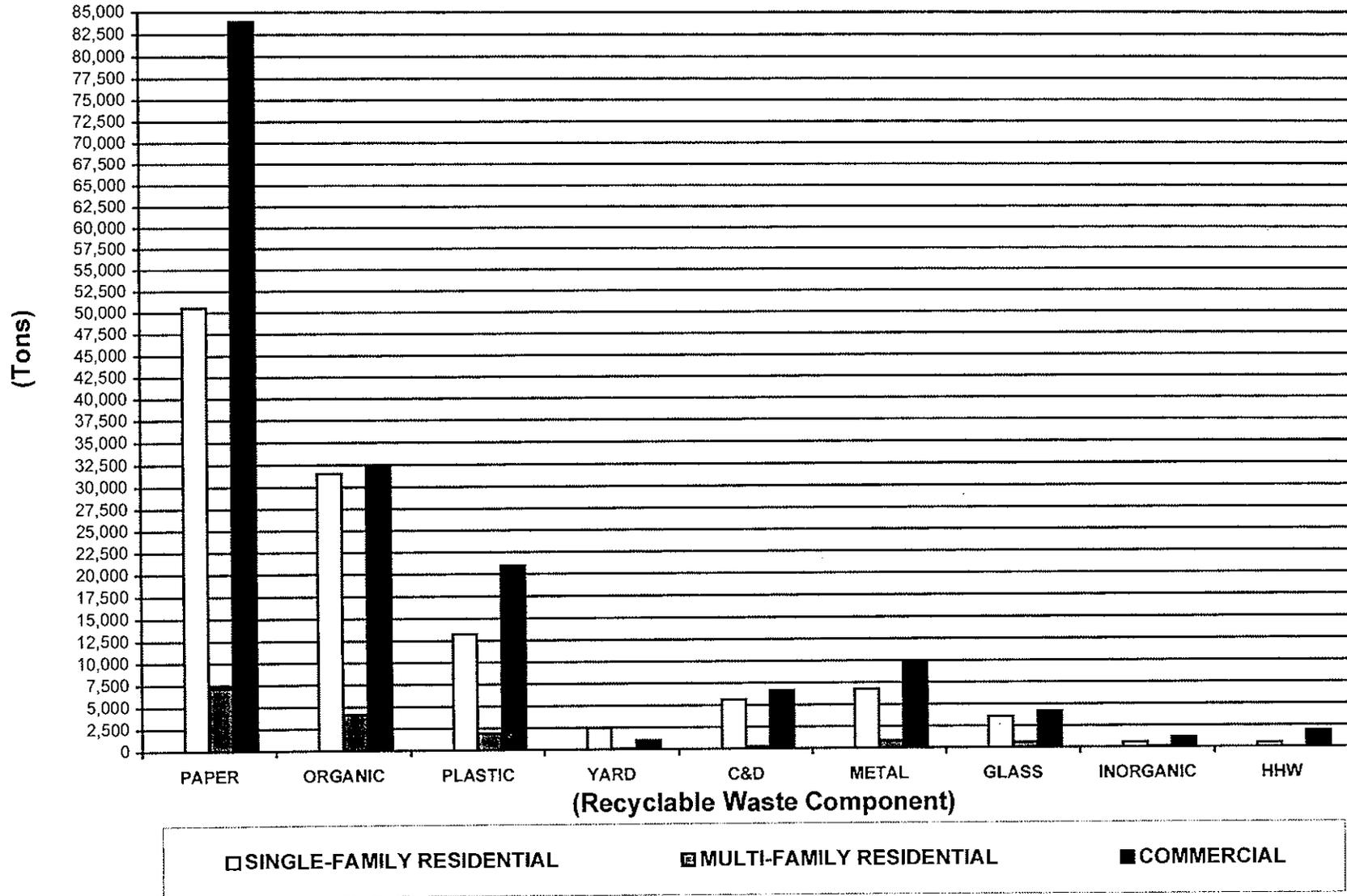
The table below provides a total of the estimated tonnage of readily recyclable materials generated by residential and commercial sources as reported in the *Waste Stream Characterization Study*:

Single-Family Residential	114,800 tons
Multi-Family Residential	15,308 tons
Commercial	161,842 tons
<b>TOTAL</b>	<b>291,949 tons</b>

Note that 161,842 tons, or 55% of the recyclable materials, are from commercial sources. Another 39% is from single-family residential sources. Chart 2-4 (see pg. 25) shows a breakdown of the recyclable waste in tons across nine waste components and three generator categories. Commercial sources generated the highest quantity of paper waste. This alone represents 59% of the recyclable paper waste and 28% of the total recyclable waste identified at the two landfills. Also notable is that another 36% of the recyclable paper waste and 17% of the total recyclable waste were from single-family residential sources. The Department expects that as of this report, readily recyclable paper disposed at the two landfills by residential sources has decreased since the study was conducted. The increase in paper recycling offered by all single-family curbside recycling programs in the County is the most probable cause for this expected decrease.

CHART 2-4

Summary of Readily Recyclable Waste in Tons  
by Waste Component and Generator Category



**SECTION 3 -  
CHANGES IN STATE AND FEDERAL LEGISLATION**

### 3.1 ILLINOIS SOLID WASTE MANAGEMENT STATUTORY AUTHORITY

#### ***ACTION ITEMS DELETED FROM PLAN-1991***

##### **Action #48**

The County should consider providing a mechanism to direct flow of waste to the various identified waste management processes proposed in its solid waste management system. Alternate methods to flow control by ordinance include by intergovernmental agreement hauler contracts and market determination.

[Deleted due to finding in C&A Carbone, Inc. v. Town of Clarkstown, which rendered ordinance methods of waste flow control unconstitutional.]

The Illinois General Assembly has granted various types of governmental entities power to manage solid waste, either individually or in combination. The following summary of the various entities' powers was prepared for the DuPage County Solid Waste Committee by Raymond L. Hansen, former DuPage County Assistant State's Attorney, in August 1993, and updated by DuPage County Solid Waste Department staff in 1995. The summary is a compilation of research and is neither advice of counsel nor a state's attorney's opinion.

The Illinois Solid Waste Planning and Recycling Act [415 ILCS 15/1 et seq.] provided DuPage County with the primary responsibility to plan for the management of municipal waste within its boundaries, identify waste reduction and recycling operations as preferable to land disposal, encourage solid waste planning on a regional basis, provide incentives for decreasing waste, and requiring counties to develop and implement plans with a time line based on the county's population. The Solid Waste Plan must provide for 15% waste reduction by the third year and 25% reduction by the fifth year. Counties were charged with implementing the Solid Waste Plan and may enlist the help of municipalities and private entities in its implementation.

***3.1.1 The County will focus on sustaining intergovernmental cooperation with local government agencies authorized by statute to perform solid waste management activities, including but not limited to counties, municipalities, townships, special taxing districts, and joint action agencies. (NEW, Plan-1996)***

#### **STATUS**

The fundamental authority to manage solid waste by local government agencies is enumerated in the statutes of counties, municipalities, townships, special taxing districts, and intergovernmental cooperative efforts by way of generic intergovernmental cooperation agreements or municipal joint action agencies. Many of the powers identified can be

implemented jointly among municipalities, counties, and townships, but not all. (Specific cites to statutes appear on the following pages.)

Counties, municipalities, and municipal joint action agencies possess a number of powers under various provisions of their codes. These powers include the authority to purchase, condemn, develop, and own solid waste projects; implement flow control; promulgate solid waste rules and regulations; license certain waste management activities; issue bonds; borrow funds; operate facilities or contract with other facilities; contract with municipal and private entities; develop and implement solid waste plans; and most other authority necessary to operate a solid waste management program.

#### **RECOMMENDATIONS**

Counties also have statutory obligations regarding solid waste. One important county obligation is the development and implementation of a solid waste management plan. This obligation includes a monetary penalty for failure to comply with the statutory obligation. A second statutory obligation of counties is the obligation to recycle 15% and 25% of the municipal waste generated in the county by years three and five respectively, of the effective date of the solid waste plan. These obligations will remain with the county regardless of how waste is managed within the county.

Townships have limited solid waste management authority. These authorities permit the township to conduct recycling programs and create solid waste taxing districts. The authorities granted to townships cover some of the same geographic areas as the powers provided to counties. In such case, there is case-specific protocol on which authorities apply.

Solid waste disposal districts are a separate type of taxing district for solid waste. These districts can be formed by either counties or townships, either individually or in groups of up to five.

Lastly, local governments have the authority to enter into intergovernmental agreements to share powers in performing their functions. The general rule is that intergovernmental agreements only permit agencies to jointly implement projects to which they share powers that they have individually for their respective geographic areas. If both agencies do not have the authority individually to undertake the project, then they cannot jointly attempt to evade limitations placed on either of them by the state legislature.

Municipal joint action agencies are created under the Intergovernmental Cooperation Act, but provide for the creation of a separate entity which has the powers given to it by the statute. Municipal joint action agencies have the same fundamental powers to manage solid waste as counties and municipalities except they are created by agreement by local governments and not specific state statutes. This statute does not give a municipal joint action agency (MJAA) the authority to impose taxes.

In summary, there are several options to managing solid waste at the local level. Only counties appear to have specific obligations regarding management of the waste stream.

**3.1.1(a) County Authorities**

Following are several different provisions of the Counties Code that provide solid waste management authority (enforcement activity and site remediation are not included).

55 ILCS 5/5-1047 permits counties to furnish property for disposal, treatment or recycling of solid waste, may charge a fee on the basis of weight, and may acquire property as necessary. The county board may issue revenue bonds to finance said facilities. Previously, counties that had adopted a solid waste management plan could use flow control in the unincorporated areas of the county to retire the bonds; however, a decision from the U.S. Supreme Court rendered on May 16, 1995, in C&A Carbone, Inc. v. Town of Clarkstown (Carbone), declared waste flow control unconstitutional under the Commerce Clause. Congressional legislative action is pending on the matter of flow control.

55 ILCS 5/5-1048 allows the county board to contract with any city, village, incorporated town, county, intergovernmental agency, or person for up to 30 years regarding collection and final disposal of solid waste. Counties may also contract with a not-for-profit agency for recycling, but a committee of three county board members must be assigned to oversee any contracts under this paragraph.

55 ILCS 5/5-8001 through 8007 provides counties authority to regulate solid waste management activity. The powers included in these sections include licensing solid waste disposal areas, licensing solid waste hauling vehicles and making rules and regulations pertaining thereto, providing for inspections of disposal areas and vehicles, and providing for penalties for violations.

55 ILCS 5/5-15006 requires counties to have adopted a solid waste management plan. Upon adopting a plan, a county can enforce the provisions of Division 15 of the Counties Code to the entire county with the exception of certain municipalities.

55 ILCS 5/5-15007 provides that counties have the power to construct and maintain improvements necessary to operate a waste management system. The county shall have the right to acquire by condemnation or other specific methods to protect the quality of the environment and the quality of life from the adverse effects by improper management of waste. The county board shall also have the power to produce and sell products from the storage, treatment, and disposal of waste and any recycled or revised materials withdrawn from the waste stream.

55 ILCS 5/5-15009 is similar to Section 15007 in that it also provides counties with the power to acquire land for waste management systems by various methods.

55 ILCS 5/5-15010 provides counties flow control from any premises within the county except premises in a municipality that has severed itself from the county; however, again, the decision in Carbone declared flow control unconstitutional, with Congressional legislative action pending. The county does not have the authority to regulate the collection of waste within any municipality. The county may appoint a solid waste committee composed of both county board members and municipal representatives to develop and implement the solid waste plan. The committee shall adopt by-laws. Any resolution of the county board affecting such a committee must have 2/3 approval from those members present and voting. The county may purchase and operate a waste management system and enter into long-term contracts with public or private entities to use the service. The fees will be used to pay expenses and retire revenue bonds. Counties can also enter into long-term contracts to operate the waste management system.

55 ILCS 5/5-15017 provides that counties may issue revenue bonds for costs associated with the waste management system. If revenue bonds are issued, then revenues generated must be sufficient to pay for operation, maintenance, and debt service costs. If insufficient revenues are generated, then bond holders may force additional fees for the services.

55 ILCS 5/5-15022 provides that counties may issue general obligation bonds for waste management facilities in a manner consistent with 5/5-1008 (the Home Rule County Use Tax Act.) DuPage County is not a home rule county; therefore, this provision does not apply to DuPage County.

### **3.1.1(b) Municipalities Authority**

65 ILCS 5/11-19-1 provides municipalities with authority to enter into contracts with private or public entities, or any agency by intergovernmental agreements, for collection and final disposition of solid waste. The contracts must be for no more than thirty years.

65 ILCS 5/11-19-1 provides that municipalities may contract with private entities to operate a facility for the disposal, treatment, or recycling of solid waste, and may enter into contracts for up to thirty years with private or public entities for the delivery of waste to such facility. Payments which may be required in regard to any such contract shall not be considered an indebtedness of the municipality for the purpose of any imposed debt limitation.

65 ILCS 5/11-19-4 provides that municipalities of less than 500,000 in population may establish and maintain plants or systems, by contract or direct provision, for the collection and disposal, treatment or recycling of solid waste, and is authorized to levy a tax for said purpose with limitations, which may be adjusted under the referendum provisions of the General Revenue Law of Illinois.

65 ILCS 5/11-19-4 provides that in addition to a garbage tax levy, a municipality may finance the establishment and maintenance of systems or plants by contract or direct provision, for the collection and disposal, treatment, or recycling of garbage through service charges, as adopted by ordinance. Such service charges must be established as can reasonably be

expected to yield revenues not in excess of contract obligations, or the costs of operation and maintenance.

65 ILCS 5/11-19-5 provides that municipalities may use flow control to provide such methods of the disposition of solid waste as shall be approved by the corporate authorities (flow control found unconstitutional in Carbone). Such methods may include, but are not limited to, landfill, incineration, composting, feeding to hogs, or otherwise. Municipalities are further authorized to sell the matter of value in or from the solid waste and the proceeds may be used for the operation of the system. Material that is intended or collected to be recycled is not garbage.

65 ILCS 5/11-19-6 provides that any municipality may exercise the powers granted by Division 19 of the Municipal Code, either individually or jointly and cooperatively with any one or more municipalities, or one or more counties.

65 ILCS 5/11-19-7 provides that two or more municipalities may declare by ordinance that it is in the best interests of the municipalities to join with each other or with one or more counties in the collection and/or disposal of solid waste, and may cause a contract to be prepared for said purpose. The contract shall set forth the decision of the municipalities to either participate in a joint garbage department operated as an inter municipal function or enter into contracts with private parties for collection and disposal of garbage; the financial and personnel responsibilities of each municipality or county; the type of financing, either by service charges and/or tax levies; the term of the contract of up to thirty years; and if the contracting parties so desire, an undertaking that they will provide by ordinance, license, contract, or other means that flow control will be employed within any municipality with more than 130,000 but less than 2,000,000 population; or within any municipality which is signatory to a solid waste management plan providing for the management of wastes generated by more than one municipality or county, and such other powers to effectuate a workable garbage collection and disposal system.

65 ILCS 5/11-19-7 provides that in the event corporate authorities of any municipality or county enter into any such joint exercise of powers previously described, the corporate authorities shall appoint a committee of no more than three of its own members to make continuing studies of the operations of such joint exercise of powers. This committee with other committees appointed by contracting parties shall constitute a joint committee on garbage and refuse disposal, which joint committee shall make recommendations to the corporate authorities on the garbage collection and disposal services, as well as prepare rules and regulations concerning said services. The corporate authorities may adopt such rules and regulations by ordinance and may provide penalties for any related violations.

65 ILCS 5/11-19-10 provides that municipalities may acquire by purchase, gift, or condemnation any real property within or without the corporate limits of the municipality for the purpose of providing facilities for the disposal of solid waste.

**3.1.1(c) Townships Authority**

60 ILCS 5/13-20(7) provides that a township board of trustees may adopt by ordinance such rules and regulations relating to recycling programs in unincorporated areas of the township as it may deem necessary and may provide penalties for violations.

60 ILCS 120/2 provides that a township board of trustees may ask for a referendum of elections requesting a collection and disposal authority to implement the "Township Refuse Act," ("Act"). This Act does not apply in any township in which a county ordinance or resolution is in effect, regulating the collection and disposal of solid waste. [Note: The decision rendered in Carbone prohibits an ordinance regulating the flow of municipal waste.]

60 ILCS 120/3 provides that township trustees, when authorized, may make contracts with public and private entities for a term less than 15 years which contracts relate to solid waste within the unincorporated area of the township. The township trustees shall declare the unincorporated area of the township a special refuse collection and disposal district for tax purposes. The county clerk shall then be authorized to extend a tax upon the special refuse collection and disposal district in the amount specified in the annual town tax levy, not to exceed .15% of the value of taxable property. The maximum tax rate may be increased to, but not to exceed .20% according to the referendum provisions.

60 ILCS 120/6 provides that the township, under the authorized powers of the Act, may adopt by ordinance such rules and regulations relating to the collection and/or final disposition of solid waste within the unincorporated area of the township. [Note: The decision rendered in Carbone prohibits an ordinance regulating the flow of municipal waste.]

**3.1.1(d) Solid Waste Disposal Districts**

70 ILCS 3105/4(a) provides that at least 1% of the voters in a county of less than 3,000,000 population may petition the circuit court of such county to order the question as to whether a solid waste disposal district shall be organized. The district boundaries must be coextensive with the boundaries of the county. A group of up to five adjoining counties may create a similar intercounty district by following similar procedures. The purpose of solid waste disposal districts is to provide for a district which shall be responsible for the collection and transport of solid waste or establish one or more solid waste processing facilities with the approval of the IEPA. IEPA approval is required when more than one county is involved in the petition.

70 ILCS 3105/4(b) provides that at least 1% of the voters in any township not already included within a solid waste disposal district may petition the circuit court of the county in which it is located to order the question as to whether a solid waste disposal district shall be organized. The district boundaries must be coextensive with the boundaries of the township. A group of up to five adjoining townships may create a similar intertownship district by

following similar procedures. IEPA approval is required when more than one township is involved in the petition.

70 ILCS 3105/9 provides that the affairs of a solid waste disposal district shall be managed by a board of five trustees who are qualified voters of such district and do not hold any other public office and are not political party officers. Trustees shall be selected on the basis of their demonstrated interest in the purpose of solid waste disposal districts.

70 ILCS 3105/16 provides that the district, with prior IEPA approval, may construct, acquire, and operate its own solid waste disposal facility, contract with other governmental bodies or with private industry for the disposal of solid wastes, or may utilize upon such terms as may be agreed upon between the board of and the other parties involved, any combination of public and private facilities.

70 ILCS 3105/17 provides that the district may charge and collect reasonable fees, adopt by laws, acquire property, make rules and regulations, have employees, and exercise appropriate police powers necessary to its mission.

70 ILCS 3105/18 provides that the district must adopt a combined annual budget and appropriation ordinance. A district may annually levy taxes upon all the taxable property therein, at a rate not exceeding .05%. After adoption of the appropriation ordinance, the board shall levy not to exceed the total amount ascertained upon all the property subject to taxation within the district.

70 ILCS 3105/21 and 3105/22 provides that a district may issue and sell bonds for the purpose of acquiring real property or rights thereto and for constructing or acquiring solid waste disposal facilities. No such bonds, other than bonds payable solely from the revenues derived by the district from the operation of such solid waste disposal facilities, may be issued unless the proposition to issue bonds has been submitted to the legal voters of the district at an election and has been approved by a majority vote. At the time of issuing bonds, other than revenue bonds, the district shall provide by ordinance for the collection of an annual tax, within the limits of the authorized taxes, sufficient to pay such bonds and the interest thereon. The district board shall order a referendum when it proposes to incur indebtedness and issue bonds, other than tax anticipation warrants and revenue bonds.

70 ILCS 3105/23 provides that districts are entitled to exercise the powers of intergovernmental cooperation, as specifically empowered by statute. A district may undertake any of its activities aided by, in cooperation with, or as a joint enterprise with any department or agency of the state or Federal government or any other solid waste disposal district, sanitary district, park district, school district, planning commission, county board, municipality, or other governmental unit.

Any county board, municipality, district, or governmental unit may aid any solid waste disposal district in any appropriate manner including equipping, operating, and maintaining

any conservation or recreation areas; and providing, conducting and supervising programs of activities; and may appropriate money for such purposes. The county board and the municipal corporate authorities may make available to the use of the district any county or municipal equipment, facility, and personnel.

**3.1.1(e) Intergovernmental Cooperation Act**

5 ILCS 220/3 provides that public agencies are authorized to enter into agreements to exercise any power, privileges, or authority exercised as specifically empowered to a public agency of this State, and to contract to perform any governmental service, activity, or undertaking which any of the public agencies entering into the contract is authorized by law to perform.

**3.1.1(f) Joint Municipal Action Agency**

5 ILCS 220/3.2 provides that any two or more municipalities, counties, or combination thereof may by intergovernmental agreement establish a Joint Municipal Action (JMAA) to provide for efficient and environmentally sound collection, transportation, processing, storage, and disposal of municipal waste. Any such agency itself shall be a municipal corporation, public body politic and corporate with a board of directors that manage the affairs of the agency within the limits of the statute.

5 ILCS 220/3.2(c) provides that JMAA may develop, own, manage, close, and finance waste projects. JMAA's powers shall be provided in the agreement establishing it, which powers may include acquiring, holding, selling real or personal property, and entering into contracts with the federal, state, or local government unit or any person relating to a waste project. Such contracts may set forth that the contracting party makes exclusive use of a waste project for collection, processing, or disposing of all or any portion of solid waste over which it has control, specific provisions with respect to the collection, processing, transportation, storage and disposal of municipal waste, and fee schedules with respect to the waste project.

5 ILCS 220/3.2(d) provides that JMAA may, borrow money and issue revenue bonds or notes for any of its corporate purposes. Such bonds or notes shall not be claimed for payment other than from revenues of the JMAA derived from the operation of its waste projects, from revenues received from its members, (including from contracts for the use of the JMAA waste projects), from bond or note proceeds, from such other receipts of the JMAA as the agreement establishing the JMAA may authorize to be pledged to the payment of bonds or notes, and from investment earnings. The JMAA shall not terminate so long as it has debt outstanding.

5 ILCS 220/3.2(F) provides that the JMAA and its members shall have the power to enter into contracts for a term not exceeding 50 years relating to municipal waste. Parties to the contract shall have the power to agree to provide for flow control in their jurisdictions. [The

decision rendered in Carbone does not prohibit units of local government from establishing municipal waste flow control by way of its waste hauler contracts.]

5 ILCS 220/3.2(g) provides that JMAA members may, upon request by the JMAA, exercise their condemnation powers and convey the property so acquired to the JMAA. The JMAA may agree to reimburse its members with respect to planning, acquisition, and construction costs of an JMAA waste project.

5 ILCS 220/3.2(h) provides that all JMAA members may be obligated by agreement with the JMAA to make payments in order to finance the costs of planning, acquisition, and construction of a waste project.

5 ILCS 220/3.2(a) provides that a municipal lead agency acting in cooperation with other units of local government to accomplish waste disposal may, by passage of an ordinance, cause the municipal lead agency to possess all the powers of the JMAA as if the municipal lead agency was established as the JMAA and also cause the cooperating units of local government to possess the same powers to enter into contracts and perform those acts as they would with JMAA.

### **3.1.1(g) IEPA Provisions**

The IEPA has several divisions that discuss site specific requirements for siting and operation, enforcement authority to the state, waste-specific statutes such as waste tires and hazardous waste. The following summarizes those sections of the Act that specifically relate to local government solid waste management.

The Local Solid Waste Management Act at 415 ILCS 10/1 et seq., provides local governments with the ability to dispose of solid waste within their jurisdiction by preparing and implementing, either individually or jointly, solid waste management plans (plan) and to the extent feasible, efficiently use products or by-products generated during the disposal process. Units of local government include municipalities, counties, or JMAA. The jurisdiction of the plan will include the corporate boundaries of the participating entities except that a county cannot plan for a municipality that has its own plan. This statute further defines the content of a plan, what is required of an incinerator, how participating entities can share their powers to arrive at and implement the plan, updating the plan in its fifth year, and that municipalities and counties can use some of the flow control granted in their statutes within the plan. [Carbone removes the authority to exercise waste flow control by ordinance].

The Solid Waste Planning and Recycling Act's [415 ILCS 15/1 et seq.] primary purpose is to provide counties with the primary responsibility to plan for the management of municipal waste within their boundaries, identify waste reduction and recycling operations as preferable to land disposal, encourage solid waste planning on a regional basis, provide incentives for decreasing waste, and requiring counties to develop and implement plans with a time line based on the county's population. This Act also contains requirements for solid waste plan content. Counties are specifically authorized under this Act to jointly create a

plan that provides for more than one county. Counties may delegate power to a municipality within the county or to a JMAA to prepare a plan on the county's behalf. The plan must provide for 15% waste reduction by the third year and 25% reduction by the fifth year. This Act specifically requires the plan to contain a recycling program which must be implemented. The county must begin implementing the plan immediately and may enlist the help of municipalities and private entities in its implementation. If a township is implementing a recycling program that complies with this Act at the time that the plan takes effect, then it may continue to implement its plan as part of the recycling portion of the county's plan. Townships may always implement a more complete recycling program than that contained in the county's plan.

Violations of this Act by failing to adhere to the schedule set forth in this Act shall be punishable by a civil penalty of \$5,000. The Attorney General, States Attorney, or a private citizen may institute the action for the penalty. The court may award costs and attorney's fees for willful, knowing, or repeated violations of this Act.

415 ILCS 5/22.15 of the Land Pollution Division of the Illinois Environmental Protection Act provides the authority, presently, for the county to collect its fee at the landfills. This provision extends the authority to collect this fee to a unit of local government as defined in the Local Solid Waste Disposal Act in which the solid waste disposal facility is located. The funds collected under this Act must be used for solid waste management purposes.

### **3.2 1991 TO 1996 CHANGES BY THE ILLINOIS GENERAL ASSEMBLY TO LEGISLATION AFFECTING SOLID WASTE MANAGEMENT MATTERS**

#### **ACTION ITEMS DELETED FROM PLAN-1991**

None.

#### **3.2.1 The County will continue to monitor and develop legislation as necessary to assist in the development and implementation of sound solid waste management programs. (NEW, Plan-1996)**

The DuPage County adopted the DuPage County Solid Waste Management Plan, dated February 1991, pursuant to paragraph 15/4 of the Illinois Solid Waste Planning and Recycling Act (415 ILCS 15/1, et seq., 1992) required that by March 1, 1991, each county with a population of 100,000 or more adopt a plan for the management of municipal waste generated within its boundaries. Pursuant to paragraph 15/5 (e) of this Act, the County must update and review the Plan every five years. Since adoption of the DuPage County Solid Waste Management Plan in February of 1991, the Illinois General Assembly has made changes to legislation which impact solid waste management matters. The following summaries, by subject matter, reflect amendments through December 31, 1995.

(4) Public Act 87-1152, became effective January 1, 1993, amending the Illinois Environmental Protection Act at 415 ILCS 5/39.2(a)(ix)(d) by providing that in the siting review process of a pollution control facility, if a member of the county board or governing body of the municipality had publicly expressed an opinion on an issue related to the site review proceeding, the member will not be precluded from taking part in the proceeding or voting on the issue.

(5) Public Act 88-163, became effective July 28, 1993, amending the Solid Waste Disposal District Act at 70 ILCS 3105/17 by providing that solid waste disposal districts are allowed to intervene, participate, and make recommendations in the local siting approval process for a solid waste disposal site or facility if the site or facility is to be located within the boundaries of the solid waste disposal district and the district was formed before January 1, 1993.

(6) Public Act 88-293, became effective January 1, 1994, amending the Illinois Environmental Protection Act to provide that if a pollution control facility does not accept any waste for a period of five years or more, the facility must obtain a new operating permit before accepting any new additional waste.

(7) Public Act 88-681, became effective December 22, 1994, amending the Illinois Environmental Protection Act by changing the term "regional pollution control facility" to "pollution control facility" throughout the Act, thus making all such facilities subject to local siting requirements and all other restrictions and requirements previously applicable to regional pollution control facilities. The amendment defines "pollution control facility" as any waste storage site, sanitary landfill, waste disposal site, waste transfer station, waste treatment facility, or waste incinerator. An opinion rendered in Tennsv, Inc., v. Gade in the United States District Court, Southern District of Illinois, caused Sections 3.32, 39.2 and 22.14(a) of the Act to be unconstitutional as these Sections pertain to the siting of facilities which accept interstate municipal solid waste. Public Act 88-861 set aside this finding by making all pollution control facilities subject to local siting approval criteria under Section 39.2 of the Act, not exclusively "regional" pollution control facilities.

(8) Public Act 89-102, became effective July 7, 1995, amending the Illinois Environmental Protection Act by providing that pollution control facilities in unincorporated Cook County will be subject to the local siting approval process in Section 39.2 of the Act.

(9) Public Act 89-122, became effective July 7, 1995, amending the Illinois Environmental Protection Act at 415 ILCS 5/3.47, 3.83 and 3.48-5 by specifying what is and is not included in the meaning of the terms "storage site" and "transfer station." The law excludes from the categories of transfer stations and storage sites those sites at which waste is stored in the detachable refuse receptacle of a refuse motor vehicle for no more than 24 hours if the receptacle is completely covered and enclosed and is stored on the same site as the load's transport vehicle. (The DuPage County Solid Waste Department staff worked with waste industry representatives from the National Solid Waste Management Association and

their counsel to require that the storage of wastes may be stored only on the same site as the load's transport vehicle).

See Section 4.8.2 herein for definition of "transfer station" and "storage site." The meaning of "transfer container" was changed to exclude completely covered or enclosed reusable transportable shipping containers that have a volume of less than 250 cubic feet based on external dimensions. This Act removes sites included under the described categories from the local siting approval process.

(10) Public Act 89-200, became effective January 1, 1996, amending the Illinois Environmental Protection Act at 415 ILCS 5/39.2 (f) providing that local siting approval granted for a sanitary landfill operation, shall expire at the end of three years from the date upon which it was granted.

**3.2.1(d) Municipal Waste**

Public Act 87-650, became effective January 1, 1992, to define the term "municipal waste" in the Local Solid Waste Disposal Act at 415 ILCS 10/2 (6) to mean "garbage, general household, institutional and commercial waste, industrial lunchroom or office waste, landscape waste, and C & D debris."

**3.2.1(e) Landscape Waste Facility Siting**

Public Act 88-557, became effective July 27, 1994, amending the Illinois Environmental Protection Act at 415 ILCS 5/39.2 (o) by exempting waste transfer stations that exclusively handle landscape waste, such as leaves, grass, and twigs, from the local siting approval procedure. In order to address potential odor problems, no single load of landscape waste may be kept at such facility for longer than 24 hours. In place of going through the local siting approval procedure, such facilities would instead require only local zoning approval.

**3.2.1(f) Landscape Waste**

Public Act 88-163, became effective September 10, 1993, amending the Illinois Environmental Protection Act at 415 ILCS 5/9(f) by providing that the burning of landscape waste for agricultural purposes, habitat management, or firefighter training is permissible, and that the burning of landscape waste by production nurseries shall be considered to be burning for agricultural purposes.

**3.2.1(g) Household Hazardous Waste Facility Siting**

Public Act 88-474, became effective January 1, 1994, to amend the Illinois Environmental Protection Act at 415 ILCS 5/22.16(b)(d) by providing that household hazardous waste collection centers are not subject to local siting requirements if the local governing authority agrees to waive the siting requirements.

**STATUS**

**3.2.1(a) Solid Waste Management Planning**

(1) Public Act 87-906, became effective January 1, 1992, to amend the Solid Waste Planning and Recycling Act at 415 ILCS 15/2(a)(5) by encouraging that solid waste planning take place on a multi-county, regional basis and through intergovernmental cooperation agreements whereby various units of local government within a region determine the best methods and locations for disposal of solid waste. (This Amendatory Act of 1992 is not to be construed to impact the authority of units of local government in the siting of solid waste disposal facilities).

(2) Public Act 87-650, became effective January 1, 1992, to amend Section 3(1) to Section 3(8) of the Illinois Local Solid Waste Disposal Act at 415 ILCS 10/3 which provides that units of local government may, on their own behalf or pursuant to an intergovernmental agreement, prepare solid waste management plans for disposal of solid waste generated within their jurisdictions, by adding that, if prepared, said "solid waste management plans require an estimate of the origin, content, and weight or volume of municipal waste that will be generated within the unit of local government's boundaries during the next 20 years, an evaluation of the advantages/disadvantages of the proposed facilities, a description of the time schedule for the development of each facility, and an explanation of the legal basis for the governmental entity to implement the plan."

(3) Public Act 87-290, became effective January 1, 1992, to amend the Illinois Solid Waste Planning and Recycling Act at 415 ILCS 15/7(b) by providing that a township may at any time adopt and implement a recycling program that is more stringent than that required by the County's Solid Waste Management Plan.

(4) Public Act 88-62, became effective January 1, 1994, authorizing townships to enter into direct agreement with for-profit corporations or other business entities to carry out recycling programs in unincorporated areas of the township and may adopt rules and regulations relating to recycling programs in unincorporated areas of the township (at 60 ILCS 1/85-13 (f) and (g)).

(5) Public Act 87-1250, became effective December 21, 1992, to amend the Illinois Solid Waste Management Act at 415 ILCS 20/6.3 by requiring that a Solid Waste Advisory Council be established (on or before October 1, 1992) consisting of 15 members representing business groups, citizen groups, environmental organizations, local governments, recycling firms, and the waste industry. The council shall meet regularly to make findings and recommendations on the Illinois Department of Natural Resources and the Illinois Environmental Protection Agency solid waste programs that are implemented under the Solid Waste Planning and Recycling Act and the Illinois Solid Waste Management Act.

**3.2.1(b) *Brownfields/Hazardous Waste Site Remediation Solid Waste Management Fund***

(1) Public Act 89-431, became effective December 15, 1995, to amend the Illinois Environmental Protection Act at 415 ILCS 5/22.2 by creating the Site Remediation Program to provide procedures for investigative and remedial activities at sites where there is a release, or threatened or suspected release, of certain substances (Brownfields sites).

(2) Public Act 89-443, signed into law on December 21, 1995, to become effective July 1, 1996, amends the Illinois Environmental Protection Act at 415 ILCS 5/22.15 by removing the ability of the State of Illinois to administer and monitor solid waste plan implementation grants, and removes \$2,000,000 from the State Solid Waste Management Fund, placing these funds into the Hazardous Waste Treatment Fund. The \$2,000,000 is removed from the State's Solid Waste Fund at \$500,000 per fiscal quarter with no sunset provision, or otherwise; monies from the Solid Waste Management Fund will be diverted on an annual basis.

(3) Public Act 89-158, became effective January 1, 1996, amending the Illinois Environmental Protection Act at 415 ILCS 5/22.2 (G) and (H), by excluding from ownership liability for clean up of hazardous substances, a unit of State or local government which acquired ownership or control of a facility through bankruptcy, tax delinquency, abandonment, or other circumstances in which the government acquired title by virtue of its function as sovereign power.

**3.2.1(c) *Pollution Control Facility Siting***

(1) Public Act 87-333, became effective September 6, 1991, amending the Illinois Environmental Protection Act at 415 ILCS 5/39.2(a)(ix)(d) by requiring that notice of a public hearing for local siting approval be given to the governing authority of every municipality contiguous to the proposed site or contiguous to the municipality in which the proposed site is to be located.

(2) Public Act 87-554, became effective September 17, 1991 and amended by Public Act 88-681 effective December 22, 1994, to prohibit any landfill owned or acquired by the Forest Preserve District from being used for development or operation of a pollution control facility. The Public Act also prohibited the transfer of interests in Forest Preserve District property to any other entity for the construction, expansion, or operation of a pollution control facility. This language prohibited the transfer of interest in the two landfills, Greene Valley and Mallard Lake, located in DuPage County to any other entity. The consent order entered December 4, 1992 requiring the landfills to close no later than December 31, 2000 dovetailed this Public Act.

(3) Public Act 87-650, became effective January 1, 1992, amending the Illinois Environmental Protection Act at 415 ILCS 5/39.2(a)(viii) by adding to the criteria for local siting approval of a pollution control facility, now requiring that any such pollution control facility be consistent with a county's adopted solid waste management plan requirements.

**3.2.1(h) Household Hazardous Waste Collection**

Public Act 87-735, became effective September 26, 1991 to create the Household Hazardous Waste Collection Program Act at 415 ILCS 90/1 which requires the Illinois Environmental Protection Agency to formulate and update a plan, by March 1, 1995, for collecting small quantities of household hazardous waste from households within the State of Illinois and requires that the Plan include a method of encouraging county and municipal household hazardous waste collection pilot projects. The Agency must establish a grant program for local governments that desire to provide a local or regional household hazardous waste collection center.

**3.2.1(i) Household Hazardous Wastes**

Public Act 88-163, became effective July 28, 1993, to amend the Household Hazardous Waste Collection Program Act to provide that the definition of "household hazardous waste" includes petroleum distillate-based solvents, oil-based, liquid paint, paint strippers, and pesticides.

**3.2.1(j) Hazardous Educational Waste**

Public Act 89-300, became effective January 1, 1996, to amend the Illinois Environmental Protection Act at 415 ILCS 5/22.47 by requiring the Illinois Environmental Protection Agency to develop and implement a program to collect hazardous educational waste from school districts and schools throughout the State of Illinois. The program shall provide for the availability for collection, transportation, and appropriate management of hazardous educational wastes for each school district or school at least every three (3) years. The Act further defines "Hazardous Educational Wastes" as a waste product that could pose a hazard during normal storage, transportation, or disposal generated from an instructional curriculum including laboratory wastes, expired chemicals, unstable compounds, and toxic or flammable materials, but does not include wastes generated as a result of building, grounds, or vehicle maintenance, asbestos abatement, lead paint abatement, or other non-curriculum activities.

**3.2.1(k) Landfills/Materials Banned or Permitted for Disposal**

(1) Appliances/Public Act 87-727, became effective September 23, 1991, to amend the Illinois Environmental Protection Act at 415 ILCS 5/22.28 banning the disposal of white goods in landfills beginning July 1, 1994, unless the white good portion (CFCs) is removed from appliance.

(2) Tires/Public Act 86-452, amended the Illinois Environmental Protection Act at 415 ILCS 5/55 to prohibit the disposal of tires in landfills beginning July 1, 1994, and beginning January 1, 1995, no person shall knowingly mix any used or waste tire, either whole or cut, with municipal waste, and no owner or operator of a sanitary landfill shall accept any used or waste tire for final disposal.

- (3) Batteries/Public Act 86-723 became effective September 1, 1990, by amending the Illinois Environmental Protection Act at 415 ILCS 5/22.23 to prohibit the disposal of lead acid batteries in landfills.
- (4) Landscape Waste/Public Act 85-1430 amended the Illinois Environmental Protection Act at 415 ILCS 5/22.22 to provide that as of July 1, 1990, no person could knowingly mix landscape waste that is intended for collection or for disposal at a landfill with any other municipal waste, and as of July 1, 1990, no owner or operator of a sanitary landfill could accept landscape waste for final disposal. The requirements of the Act do not apply to landscape waste collected as part of a municipal street sweeping operation where the intent is to provide street sweeping service rather than leaf collection, nor to landscape waste collected by bar screens or grates in a sewage treatment system.
- (5) Waste Oil/Public Act 87-1213 amended the Illinois Environmental Protection Act at 415 ILCS 5/21.6 to provide that beginning July 1, 1996, no person may knowingly mix liquid used oil with any municipal waste that is intended for collection and disposal at a landfill, and beginning July 1, 1996, no owner or operator of a sanitary landfill shall accept liquid used oil for final disposal that is discernible in the course of prudent business operation. "Liquid used oil" does not include used oil filters, rags, absorbent material used to collect spilled oil or other materials incidentally contaminated with used oil, or empty containers which previously contained virgin oil, re-refined oil, or used oil. "Used oil" as defined at 415 ILCS 5/3.51 means any oil which has been refined from crude oil or refined from used oil, has been used, and as a result of such use has been contaminated by physical or chemical impurities; except, "used oil" shall not include that type of oil generated on farmland property devoted to agricultural use and used on that property for heating or burning.
- (6) Potentially Infectious Medical Waste/Public Act 87-752 became effective January 1, 1992, to amend the Illinois Environmental Protection Act at 415 ILCS 5/56 by providing that potentially infectious medical waste may be disposed of in a landfill only if the infectious potential has been eliminated by treatment and sharps have been rendered unrecognizable by treatment, for example, ground to a powder. As of July 1, 1992, no person can cause or allow the delivery or transfer of any potentially infectious medical waste to a facility for storage, treatment, or transfer that does not have a permit issued by the Illinois Environmental Protection Agency to receive such waste. Potentially infectious medical waste does not include waste generated as general household waste.
- (7) Animal Carcasses/Public Act 88-133, became effective January 1, 1994, to amend the Illinois Dead Animal Disposal Act at 225 ILCS 610 by allowing for the disposal of dead animals, poultry, and fish by on-site composting or conveyance to a licensed landfill; and provides for the licensing of animal collection services and the permitting of vehicles used in the performance of those services; and provides that no license or permit is required for an owner, operator, or caretaker to convey dead animals to a licensed landfill.

**3.2.1(l) Waste Reporting**

Public Act 87-484, became effective January 1, 1992, to amend the Illinois Environmental Protection Act at 415 ILCS 5/22.31 by providing that beginning January 1, 1992, no landfill or incinerator operator may accept any nonhazardous solid waste for permanent disposal or incineration unless the operator makes a record, based on information provided by the waste transporter, of the state where the waste was generated, or the state from which the waste was shipped to the disposal facility.

**3.2.1(m) Recycling**

(1) Public Act 87-650, became effective January 1, 1992, to amend the Illinois Planning and Recycling Act at 415 ILCS 15/6(3) which requires that the county waste management plan adopt a recycling program which shall be designed to recycle, by the end of the third and fifth years of the program, respectively 15% and 25% of the municipal waste generated in the county, subject to the existence of a viable market for the recycled material, based on measurements of recycling and waste generated in term of weight, by adding that the "determination of the recycling rate shall not include: discarded motor vehicles; wastes used for clean fill or erosion control; or commercial, institutional, or industrial machinery or equipment."

(2) Public Act 87-485, became effective January 1, 1992, to amend the Illinois Solid Waste Management Act at 415 ILCS 20/3(d) and 3(e) to provide that beginning July 1, 2000, at least 50% of the total dollar value of paper and paper products purchased by the Illinois Department of Central Management Services shall be recycled paper and paper products and established minimum percentages for postconsumer material in various paper products purchased by the Department of Central Management Services. [Note: this legislation may establish a precedence for paper products purchased by units of local government.]

(3) Public Act 88-60, became effective July 7, 1993, to amend the Illinois Solid Waste Planning and Recycling Act at 415 ILCS 15/8.5 by requiring that the Illinois Department of Natural Resources provide a report to the Illinois General Assembly on high-rise residential and office recycling projects on or before July 1, 1994. The report shall include, but is not limited to, a review of the volume of materials collected and costs associated with such projects compared to other collection methods.

**3.2.1(n) Enforcement**

(1) Public Act 88-474, became effective January 1, 1994, to amend the Illinois Environmental Protection Act at 415 ILCS 5/22.15 by providing that the Illinois Environmental Protection Agency audit expenditures made by local governments from grants for local landfill inspection and enforcement activity.

(2) Public Act 88-381, became effective January 1, 1994, to amend the Junkyard Act at 415 ILCS 95/4.5 by authorizing the Illinois Environmental Protection Agency to inspect any automobile graveyard within 1000 feet of a canal in Illinois to determine if any contaminants are entering canal waters from the automobile graveyard.

(3) Public Act 87-939, became effective August 28, 1992, to amend the Counties Code at 55 ILCS 5/5-1118 by authorizing the county board of any county to provide for the removal of garbage and debris from unincorporated areas of the county if the owner of the property refuses or neglects to remove the garbage and debris and may collect the reasonable costs of removal from the owner or file a lien upon the property affected.

**3.2.1(o) Alternate Fuels Act**

Public Act 89-410, became effective November 17, 1995, creating the Alternate Fuels Act, which provides that during the years 1996 through 1999 the Office of the Secretary of State shall collect an annual user fee of \$20 per vehicle from any individual, partnership, association, corporation or agency of the United States government which operates any combination of ten or more motor vehicles, that do not use alternate fuel sources. Although the law exempts owners of State, county, and local government vehicles; rental vehicles; antique vehicles; electric vehicles; and motorcycles from paying the user fees on such vehicles, the DuPage County Solid Waste Department, as part of a pilot project, is converting a Department vehicle to a bi-fuel vehicle which will operate on either natural gas or gasoline. The Department will subsequently apply for an 80% rebate from the State to cover a portion of the vehicle retrofitting costs.

**3.2.1(p) Retail Rate Law**

Public Act 89-448, dated March 14, 1996, repealed the Retail Rate Law. The Retail Rate Law was passed in 1988 to attract new energy sources. Under this law, power companies are required to buy electricity from incinerators at the retail, rather than wholesale rate. In general, the Retail Rate Law encouraged the development of new waste-to-energy facilities (municipal waste incinerators) with tax dollars. Repeal of the Law negatively impacts the amount of energy revenues for the Robbins Waste-to-Energy Facility. Municipalities within the County may consider sending their municipal waste to the Robbins Facility after the Mallard Lake and Greene Valley landfills close.

According to the Illinois Environmental Protection Agency Air Pollution Control Division, the air quality permit and land permit for the waste-to-energy facility, known as the West Suburban Recycling and Energy Center, in McCook/Summit was denied on December 27, 1995. According to the IEPA's Community Relations Department this is the only permit application other than the Robbins facility currently pending with the IEPA for a waste-to-energy facility in Illinois. There are several other waste-to-energy facilities being planned or considered throughout the State; however, no additional permit applications have been submitted to the IEPA.

### 3.3 PROPOSED LEGISLATIVE CHANGES

DuPage County and other public entities have proposed or intend to propose amendments to legislation pertaining to solid waste management issues. A history of the activity and a summary of the proposed legislation by subject matter follows.

#### *RECOMMENDATIONS*

##### **3.3.1 Landfill Surcharge Conversion Ratio**

On March 22, 1988, the County Board adopted the DuPage County Waste Management Ordinance under ordinance number ECO-0001-88.011 which specified the scope of the County's regulatory authority, with respect to solid waste disposal, performance standards for sanitary landfills, landfill inspection procedures, enforcement procedures, and a mechanism by which a County Solid Waste Fee may be imposed through surcharge at the landfills. This ordinance (identified as Chapter 30 of the DuPage County Code) was adopted in response to the statutory authority granted to the County under the "Solid Waste Management Act," Public Act 84-1319, and an "Act in Relation to Water Supply, Drainage, Sewage, Pollution, Waste Management and Flood Control in certain Counties" under Public Act 85-14.

On September 26, 1991, Public Act 87-735 became effective which provided that the total landfill surcharge to be paid to the State and the County was not to exceed \$1.05 per cubic yard or \$2.22 per ton. Under Section 22.15 of the Environmental Protection Act, the County and State receive authority to assess a surcharge fee of either \$0.45 per cubic yard/\$0.60 per cubic yard, the total not exceeding \$1.05 per cubic yard or \$0.95 per ton/\$1.27 per ton, the total not exceeding \$2.22 per ton. Subsequent to discussions with the IEPA regarding the surcharge amount received by the Agency and the County, IEPA agreed to invert the surcharge rate, to allow the County to assess \$0.60 per cubic yard or \$1.27 per ton and the State to assess \$0.45 per cubic yard or \$0.95 per ton. On November 26, 1991, the County adopted an amendment to Chapter 30 to provide for the inverted surcharge rate.

Prior to the installation of scales at Mallard Lake Landfill and Greene Valley Landfill, volumes were reported by cubic yard. In converting to tons in 1992, the operators used the statutory allowance of 2.11 as a conversion ratio, in lieu of the regulatory conversion ratio of 3.3 as set forth at 35 Illinois Administrative Code 858.401(c). This conversion ratio was previously negotiated between the Agency and the operators to provide the operators with an incentive for installing scales at the landfills.

On March 10, 1992, the County adopted resolution #LEG-001-92 which provided the County the authority to proceed with amendatory legislation, after recognizing the significant revenue loss suffered by the County upon the landfills' conversion from cubic yards to tons. In the Spring Session of 1992, Senator Pate Philip introduced Senate Bill 1712, which proposed to amend the Illinois Environmental Protection Act to require the use of the regulatory conversion ratio of 3.3 in the calculation of the surcharge fee paid to the County

and the State. That bill remained in Rules Committee due to a misinterpretation, that the surcharge was being increased rather than equitably assessed. During that Session, DuPage County Solid Waste Staff testified before the Senate Energy and Environment Committee to clarify this misinterpretation. In the Spring Session of the 1993 General Assembly, a sponsor was sought to once again introduce the amendatory language, however, the amendatory language was not introduced in that Session.

The DuPage County Solid Waste Department has notified other counties within Illinois that have experienced revenue losses due to this conversion. Copies of the proposed legislation and revenue concerns have been forwarded to the impacted counties.

**3.3.2 Solid Waste Facility Surcharge and Planning Grants**

In a last hour action by Conference Committee recommendation, House Bill 901 was enacted under Public Act 89-443 on December 21, 1995. The legislation will ultimately impact the entire State's solid waste management enforcement, planning, and implementation efforts. The legislation will also effect the private sector providing engineering and planning services to the County and State.

Public Act 89-443 removes the ability of the State to implement and monitor solid waste planning grants, and removes \$2,000,000 from the State Solid Waste Fund. Planning grants provide funds to programs that reduce or recycle significant portions of the waste stream. The Solid Waste Department was planning to seek grant monies for several major waste reduction programs, including those pertaining to commercial sector waste reduction education and C & D debris recycling promotion, which operations remove valuable resources from the waste stream. A recent study showed that 34% of DuPage County's waste stream consists of C & D material. By reducing the waste stream, DuPage County businesses and residents could potentially save millions of dollars in waste disposal fees.

In the past two years, DuPage County landfills have placed eight million dollars in the State Solid Waste Fund. The DuPage County contribution to the Solid Waste Fund for 1995 is:

STATE SOLID WASTE FUND 1995 (from all landfills within the State)	Total Budget	<u>\$6,000,000</u>
DUPAGE COUNTY LANDFILLS 1995	Total Contribution	<u>\$4,000,000</u>

Under Public Act 89-443, DuPage County will in essence be supporting the clean-up of areas outside its border and will lose funding of its own solid waste and enforcement programs.

In 1992, a consent decree was issued ordering both landfills in DuPage County to close by no later than December 31, 2000. This action has caused the amount of waste going into the Mallard Lake and Greene Valley Landfills to increase dramatically. The Greene Valley Landfill is predicated to close by the end of 1996, and the Mallard Lake Landfill is expected

to close 1998. Once these landfills are closed, they will not generate anymore surcharge revenue for DuPage County solid waste programs.

The Solid Waste Agency of Northern Cook County ("SWANCC") is in the process of proposing legislation for a two-fold purpose, first to respond to the impact of Public Act 89-443 as it pertains to Phase III Grants and secondly, to propose assessing a surcharge at waste transfer facilities in place of a surcharge at a landfill or incinerator.

SWANCC's first proposal calls for the reauthorization of the Illinois Environmental Protection Agency ("IEPA") to issue Phase III grants and to modify the IEPA's grant programs to allow for the issuance of block grants that will allow for greater local flexibility to meet and address local needs. The proposal requires IEPA to spend at least \$2 million on Phase III block grants each year.

The proposed SWANCC legislation also intends to authorize units of local government to assess the local surcharge of \$1.27 currently charged at landfills at waste transfer stations. The legislation proposes to grandfather DuPage County landfills so the revenue collected by DuPage County for the remaining life of the landfills is not impacted. However, the proposed legislation allows 100% of the surcharge revenue to be assessed up front at waste transfer facilities, and does not give consideration to units of local government hosting the final disposal facilities. The host units of local government which collected a surcharge from these landfills or incinerators would no longer be able to collect a surcharge from these facilities if a surcharge is collected at the front end from the unit of local government at a waste transfer station.

To eliminate this concern, a provision may be incorporated into the legislation requiring a unit of local government hosting a waste transfer facility to enter into an intergovernmental agreement to share the surcharge revenue with the unit of local government hosting the final disposal facility (landfill or incinerator), before a percentage of the surcharge can be assessed at the waste transfer facility (for example provide for a 50% split in revenue).

### ***3.3.3 "Clean C & D Debris" as Defined in the Illinois Environmental Protection Act***

The term "clean C & D debris" ("clean C & D") is presently defined at Section 3.78 of the Illinois Environmental Protection Act ("Act") to narrowly include what can basically be classified as clean fill material. However, the Solid Waste Department of DuPage County believes that clean C & D should be redefined as C & D material without outside contaminants or waste streams. Clean C & D does not appear to pose a threat to human health or the environment. A recent waste sort study (dated 12/94) performed by DuPage County, indicated that C & D comprised materials 34% of the waste stream. With these factors in mind, the County would like to encourage continued C & D separation operations throughout the County and State of Illinois, to assist the industry in removing these materials from the waste stream.

One means by which this may be accomplished is to expand the definition of clean C & D material to allow for storage and transfer of C & D material without the need to go through the stringent siting requirements for waste storage or transfer as set forth within the Act.

The amended version of "waste storage" and "transfer" as set forth in the Act states that a waste storage site or waste transfer site does not include a site that accepts or receives open top units containing only clean C & D debris. Therefore, by expanding the definition of clean C & D to include more C & D materials, more C & D materials could potentially be removed from the waste stream.

The Solid Waste Department is presently working with the construction industry and the Illinois Environmental Protection Agency to draft a new, broader definition for "clean C & D debris."

### **3.3.4 Household Hazardous Waste Fund**

The Solid Waste Department Staff is working with the Illinois Environmental Protection Agency to create a new Household Hazardous Waste Fund by drafting legislation which proposes to amend the Illinois Environmental Protection Act at 415 ILCS 90/8. This Fund would consist of donations, reimbursements, voluntary payments, and other sources for the purpose of funding operation of the household hazardous waste collection programs. Appropriation of the funds shall require joint approval from the IEPA and the unit of local government hosting the household hazardous waste collection activity. The proposal would provide that the IEPA assume generator status of all materials collected as part of the household hazardous waste programs operated or contracted by the IEPA. This proposed legislation is in draft form.

### **3.3.5 Federal Legislation Pertaining to Solid Waste Management Franchising**

There are attempts in Congress to tighten up the states and political subdivisions' authority to enter into contracts for the purpose of solid waste management activity. This action is in response to a recent finding in USA Recycling, Inc. v. Town of Babylon, which would not allow political subdivisions to designate a particular solid waste management facility within its waste hauling contracts. Certain units of local government have expressed their interest in retaining authority to designate a facility by contract. The ability to enter into agreements and designate a facility would allow for political subdivisions to enter into waste hauling contracts which stipulate for example, that material cannot be disposed at a facility which accepts special waste. Concern remains as to whether long-term liability for clean up is assumed by a political subdivision that designates a particular solid waste facility within its waste hauling contracts.

Proposed amendments under Federal Senate Bill 534 and HR 1085 have not had any further action to date. Representative Oxley introduced language which intends that "any State or political subdivision would not be prevented from franchising, licensing, or contracting for

solid waste collection, processing or disposal." Lake County and Kane County have expressed interest in having the following language introduced:

"Notwithstanding the provisions of this Section, a political subdivision may enter into a contract, franchise or agreement with, or issue a license or permit to, a public or private entity by which the public or private entity is exclusively or non-exclusively authorized to provide a solid waste management activity.

Such political subdivision may as a condition in such contract, franchise, agreement, license, or permit, require the public or private entity to deliver the solid waste or voluntarily relinquished recyclable material to a waste management facility identified by the political subdivision in such contract, franchise, agreement, license or permit.

Any such contract, franchise or agreement, regardless of its effective date, and any such license or permit, regardless of when issued, shall be considered to be a reasonable regulation of commerce and shall not be considered to be an undue burden or otherwise impair, restrain, or discriminate against interstate commerce."

After discussion with the DuPage County Mayors and Managers Conference staff, it is recommended that additional language be considered which specifically defines over what area a political subdivision would have the authority to franchise; for example, municipalities would have authority to franchise within their corporate boundaries, counties only within their unincorporated areas and solid waste agencies within their service areas.

### **3.3.6 *Municipal Waste Flow Control***

On May 16, 1994, the U.S. Supreme Court held that waste flow control is unconstitutional under the Commerce Clause in a decision rendered in C&A Carbone, Inc. v. Town of Clarkstown. The debate over a solid waste management policy is now pending in Congress where several bills have been introduced that would authorize states and delegated local governments to impose waste flow control. Congress will continue to address the issue of flow control in the next Session. The Solid Waste Committee of the DuPage County Board voted unanimously on May 4, 1994, not to take a position on the issue of flow control of municipal solid waste at that time. The National Association of Counties regularly updates the Solid Waste Department of congressional actions on the issue of municipal waste flow control.

**SECTION 4 -  
SOLID WASTE SYSTEM**

## 4.1 SOURCE REDUCTION AND REUSE

### ACTION ITEMS DELETED FROM PLAN 1991

None.

**4.1.1 The County should encourage local industry to streamline the product design, manufacturing, and packaging processes they utilize by offering general information and technical assistance regarding source reduction practices. (EXISTING, Action #1, Plan-1991)**

### STATUS

The Solid Waste Department and Solid Waste Education Center (Education Center) provide general information in response to local industry inquiries on waste reduction and recycling through phone support and publication distribution.

Department records do not indicate that technical assistance was provided to local industry regarding the source reduction practices of streamlining product design, manufacturing, or packaging processes.

### RECOMMENDATIONS

The County, through the Solid Waste Department and the Education Center, should continue to offer general information and technical support on source reduction practices through phone support, literature distribution, and both resource center availability and tours at the Education Center.

In addition, the County should provide grant funding for a pilot commercial outreach program. The principal educational focus of the program should be waste reduction for businesses and multi-family dwellings. Local government units and private industries who become informed about this grant program may have the opportunity to participate in the program or at least receive free educational information on waste reduction. Training sessions and educational materials provided for grant recipients should include a section on the benefits and examples of redesigning products, manufacturing, and packaging processes that contribute to source reduction.

The Solid Waste Department, Education Center, and commercial outreach program grant recipients should also give local industries information on state programs such as the Clean Manufacturing Program of the Illinois Hazardous Waste Research and Information Center (HWRIC). This program provides environmental technical assistance, research, and information to businesses and government agencies on issues related to pollution prevention and improved waste management.

With overall Internet usage on the rise, the Solid Waste Department should utilize the County's Internet Home Page, which is currently in development, to disseminate this information when and where applicable.

**4.1.2 The County must promote waste prevention. (EXISTING, Action #2, Plan-1991)**

**STATUS**

The County promotes waste prevention through education and the distribution of literature. The Education Center provides the public and private sector with numerous books, magazines, videos, displays, and workshops which encourage waste prevention and recycling. The Solid Waste Department provides general information and waste prevention brochures such as the *Reduce Waste & Recycle* guides for hospitals, theaters, office buildings, automotive repair shops, and hotel/eating and drinking establishments. These five booklets were created in cooperation with the Cooperative Extension Service (CES) for the purpose of increasing waste reduction/recycling efforts in the commercial sector. Other waste prevention brochures include *The New DuPage Shopper*, *The Three R's*, and the *Waste Reduction Directory* (formerly the *Recycling Yellow Pages*).

The Solid Waste Committee is also reviewing establishment of a "Model Business" waste reduction and recycling education program. The program could provide a means to educate key personnel from small to medium-sized companies to examine their own business for waste reduction and recycling opportunities.

**RECOMMENDATIONS**

The County should continue to provide public information and education encouraging waste reduction in the form of source reduction, reuse, recycling, and procurement strategies and utilize the Education Center as a major resource.

In addition, the County should strongly encourage residents and businesses to purchase products that are durable, reusable, and recyclable; with minimal packaging; and made from post-consumer waste. As a result, not only will landfill space, energy, and resources be saved, but the demand for these products will serve to strengthen material markets as well as develop new markets for recyclables which is necessary for "closing the loop" on recycling.

Furthermore, the County should establish a commercial outreach program offering waste reduction and recycling education for commercial establishments. This outreach program would provide businesses as well as multi-family dwellings with information on how to incorporate waste reduction and recycling practices into their own establishments.

**4.1.3 As part of the County's waste reduction program, pollution abatement should be aimed at minimizing the negative impact of potentially hazardous refuse on the environment. (EXISTING, Action #3, Plan-1991)**

Please refer to Section 4.5, Household Hazardous Waste.

**4.1.4 The County should make an effort to reduce the total amount of waste it generates and should minimize the use of highly toxic or disposable products whenever possible. (EXISTING, Action #4, Plan-1991)**

#### **STATUS**

The County uses a variety of media to educate the public on waste reduction, reuse, and recycling. To reduce waste, the County has assisted in providing communities with curbside recycling, drop-off centers, and a landscape waste collection site. In addition, the County has made an effort to reduce waste by setting up an "in-house" program. This program includes providing bins and centralized recycling containers for the County complex. Compactors, and trailers were also purchased to reduce the volume of waste.

In previous years, attempts have been made to adopt guidelines for procurement of recycled products. However, the County still needs to formulate a comprehensive waste reduction policy for County offices that will include minimizing the use of highly toxic and disposable products.

#### **RECOMMENDATIONS**

The County has made significant progress in setting up and expanding an "in-house" recycling program. Initially, bins and centralized recycling containers were provided. Then compactors, and trailers were purchased to assist in reducing the volume of waste. Now, as of December 1995, the entire County complex is equipped to handle the recycling of multiple materials including: office paper, cardboard, aluminum, glass, and more. Several of the buildings are also accepting newspaper, magazines, soft and hard covered textbooks, blueprints, binders, Styrofoam cups, steel cans, tin cans, six-pack rings, toner cartridges, HDPE and PET plastic bottles, tires, batteries, antifreeze, motor oil, oil filters, and landscape waste.

The County recommends expanding the "in-house" recycling program to include items such as fluorescent light bulbs, various plastics, and rigid and expanded polystyrene materials while striving to exceed our current recycling rate of approximately 33%.

The County's "in-house" program should also include source reduction and reuse of materials. For example, bathroom paper towels could be replaced by reusable cloth towels, Styrofoam cups by glass or ceramic mugs, and unnecessary office paper (used for

inner-office communications such as memos, etc.) by electronic media such as E-Mail or a networking program.

Along with the continued expansion of the County's "in-house" recycling program, the County should also continue the joint purchasing program. Government agencies should be encouraged to make joint purchases for products containing post-consumer waste, like Xerox paper, in large quantities at more economical prices. Guidelines should be developed to help minimize the use of highly toxic products and for procuring recycled products. Establishing procurement guidelines will enable the County's individual departments to select products and supplies that contain recycled materials whenever they are attainable and economically feasible.

## 4.2 RECYCLING

### *ACTION ITEMS DELETED FROM PLAN-1991*

#### **Action #5**

Facilitate the development of as many as 3 additional multi-material recycling centers (MRCs) before 1992.

#### **Action #6**

Incorporate standards for equipment, operation, and construction of multi-material recycling centers as described herein and oversee the administration of such standards.

#### **Action #10**

The use of County-designated disposal facilities should be prohibited or otherwise discouraged to communities not providing for the collection of the recyclable materials accepted by the IPF.

#### **Action #11**

Begin construction of IPF 2 when IPF 1 is shown to be at 85 percent capacity and when funding is available.

#### **Action #12**

Facilitate the development of satellite drop-off facilities (SDFs) to address the needs of multi-family housing complexes.

#### 4.2.1 Residential Recycling

**4.2.1(a) Continue to provide assistance to the existing drop-off center facilities. (NEW, Plan-1996)**

Currently, many multi-family dwellings and commercial establishments rely on drop-off facilities as their only outlet for depositing recyclable materials. Several of the drop-offs even accept a wider variety of materials that are not collected through residential curbside programs. Therefore, it is the County's recommendations to continue to provide assistance to the existing drop-off facilities.

**4.2.1(b) Pursue the implementation of curbside collection services to additional households within DuPage County. (EXISTING, Action #7, Plan-1991)**

#### **STATUS**

The County has been very successful in working with local governments to achieve some type of curbside recycling service. The 32 municipalities within DuPage County all have curbside programs. Curbside recycling programs are also available to the majority of residents in unincorporated areas through their contracted waste hauler. Consequently in 1992, DuPage County became the first county in Illinois to achieve curbside collection capability throughout its borders.

The IPF was developed in 1991 as the first facility in DuPage County to process the recyclables generated by the curbside residential recycling programs initiated as a result of recommendations made in Plan-1991. The IPF began operating in August 1991. The IPF separates recyclables, which have been separated from the rest of the waste stream by citizens at their residences, into individual market categories. Thus, the facility is sometimes referred to as a "clean" materials recovery facility. The County contracted with CRINC of Chelmsford, Massachusetts to operate the facility. The IPF was originally established to not charge a tipping fee. The County owns the land, building, and major processing equipment at the IPF.

Plan-1991 provides that net revenues from the IPF be returned to the delivery agents (haulers) in the form of a rebate that is intended to benefit the municipality which was the source of the residential recyclables delivered to the facility. Some municipal hauling contracts require their hauler to pass the rebate directly to the municipality. Other communities allow their hauler to retain the rebate keeping the amount in mind as their contract is renegotiated. Revenues during the first two years of IPF operation were insufficient to provide a rebate. Rebates totaling approximately \$60,000 were returned to haulers in 1993, \$325,000 in 1994, and \$20,000 in 1995.

**RECOMMENDATIONS**

In 1992, the County successfully achieved curbside collection capability throughout its municipal borders. However, the County should encourage licensed waste haulers to expand recycling services to unincorporated areas.

**4.2.1(c) Encourage drop-off facilities ~~and curbside~~, single-family, and multi-family collection services to accept and market the maximum range of recyclable materials. (REVISED, Action #8, PLAN-1991)**

**STATUS**

**Traditional Recyclables Materials**

The original agreement between the DuPage County and New England CRINC for the operation of the IPF in Carol Stream lists the processible materials that the IPF is designed to accept and process. The list includes: flint, amber, and green glass; food and beverage containers; tin-plated steel cans (up to one gallon in size); aluminum used beverage containers; PET plastic bottles; HDPE plastic containers; newsprint; corrugated paper; kraft paper; phone books; and magazines (without covers).

In the beginning of 1993, all County municipalities, townships, and residential recyclables haulers were notified of additional materials accepted at the IPF. The County advised all municipalities that they may request their haulers to add these products to their list of curbside recyclables. The new materials accepted beginning in December 1992 were aluminum foil and pie plates, six- & twelve-pack rings, aerosol cans, and catalogs.

In March 1993, the County notified haulers, municipalities, and townships about the addition of paperboard (chipboard and boxboard) to the list of materials accepted at the IPF, effective April 1, 1993.

In July 1993, municipalities, townships, and haulers were notified by a letter from the County that a number of municipalities were pursuing the addition of materials beyond the list of materials currently accepted at the IPF. The County wanted to assure municipalities that their collection programs were provided with the best possible services at the IPF, even though the new materials municipalities were requesting to recycle had limited marketability at the time and minimal impact on waste diversion. The letter also indicated that the County honored requests from Wheaton and Hanover Park to expand the list of materials accepted from their communities at the IPF.

In February 1995, the County issued an IPF Acceptable Materials & Quality Specifications list to notify recyclables haulers and municipal and township recycling officials about the addition of the following new materials to be accepted at the IPF: mixed paper, injection molded HDPE containers, wet strength carrier stock, polystyrene food service containers,

frozen food packages, aseptic packaging & gable top containers, formed steel containers, and custom PET plastic containers. The Solid Waste Department also notified Chicago area recyclables collectors about the availability of the IPF for recyclable materials. The new list of materials accepted at the IPF was included as an attachment.

This list of acceptable materials remains in effect as of September 1995.

**Hard-to-Handle Recyclable Materials**

Since 1993, the IEPA has sponsored four used tire collections in four County municipalities in coordination with the County. Downers Grove, Addison, and Naperville hosted a collection in 1993, and West Chicago hosted a collection in 1995. In 1994 and 1995, Naperville sponsored, coordinated, and hosted its own used tire collection.

To promote compliance with State statutes which prohibit the disposal of certain hard-to-handle wastes via the municipal waste stream, the Solid Waste Department developed and distributed a newsletter titled "White Paper on White Goods: Handling, Recycling, and Disposal Options" in September 1992. In this newsletter, the Department promoted compliance with Section 608 (c)(1) of the 1990 Amendments to the Federal Clean Air Act which states that, effective July 1, 1992, individuals are prohibited from knowingly venting CFC or HCFC refrigerant gases into the atmosphere while maintaining, servicing, repairing, or disposing of refrigeration equipment. The Department also promoted compliance with a proposed amendment to the Illinois Environmental Protection Act which states that, effective July 1, 1994, white goods are banned from disposal in a landfill unless the white good components such as CFCs or PCBs have been removed. The newsletter also discusses white goods processing and collection, the results of a municipal survey on white goods hauling, and outlets for acceptance and collection of white goods for County municipalities and unincorporated areas.

In June 1994, the Solid Waste Department notified all municipalities, townships, and the DuPage Mayors and Managers Conference about the new legislation prohibiting used tires and white goods disposal by landfilling. The notice refers to and provides as attachments two Titles/Sections of the Environmental Protection Act: Title XIV-Used Tires, Sections 55 and 55.8, and Title V-Land Pollution and Refuse Control, Section 22.28 White Goods.

**RECOMMENDATIONS**

**Traditional Recyclables Materials**

Most drop-off facilities and single-family collection services in the County already accept and market a wide range of recyclable materials. However, the County should encourage multi-family collection service providers to accept a wider range of recyclable materials when possible. Furthermore, the County should remain progressive in maximizing recyclable materials collection as it promotes further waste reduction efforts.

The County should continue to track recyclables commodities to ascertain when new markets are developed in the region for additional types of recyclable materials. One method the Department may begin to utilize for tracking market conditions is the Chicago Board of Trade's Recyclables Commodity Exchange Service. This service provides up-to-date material availability and price information for buyers and sellers of recyclable materials. This service may help to identify new material markets not previously known or available to the County, its municipalities, or townships.

**Hard-to-Handle Recyclable Materials**

The County should continue to promote one-day used tire collections sponsored by the IEPA and municipalities to supplement existing outlets for used tire collection. These one-day collections give residents a no-cost method of proper tire disposal. In addition, residents have the opportunity to drop-off multiple types and quantities of tires. Many residents participate in one-day collections since ongoing collection sites usually impose a drop-off fee and have restrictions both on types and quantities of tires accepted.

The County should continue to notify residents about recycling collection services for white goods. This may be accomplished through Department publications such as the *Waste Reduction Directory (formerly the Recycling Yellow Pages)* and response to phone inquiries at the Solid Waste Department and Solid Waste Education Center.

**4.2.1(d) Encourage the implementation of curbside residential collection programs which are designed for the convenience of the resident. (REVISED, Action #9, Plan-1991)**

**STATUS**

The County has reached this goal. Residents throughout the County are participating in a commingled collection system where materials are combined in the same container for collection and the only separation required is paper from non-paper. This approach was made possible by the development of the IPF and private processing facilities using similar sorting processes.

**RECOMMENDATIONS**

The County's goal to develop a commingled collection system which combines materials in the same container with the only separation required being paper from non-paper has been successfully implemented. This approach was made possible by the development of the IPF private processing facilities using similar sorting processes, and by the distribution of curbside recycling bins.

In order to make curbside recycling more convenient and economically feasible the County researched the construction and cost of numerous curbside recycling bins. During the period from 1989 through 1993, the County purchased and distributed approximately

220,500 blue curbside recycling bins to its residents. The blue bins were constructed from a durable LLD Polyethylene recycled plastic with a capacity level of twenty gallons. Through several of the municipalities residents could also purchase secured lids and wheel units, made from the same recycled materials, for a small fee. As a result of the County's efforts, curbside recycling has become extremely successful.

The County no longer provides financial assistance towards the purchase of recycling bins. However, during 1995 the County administered a joint purchasing agreement to allow local government units or contracted haulers to make subsequent purchases for residents at the same low price.

**4.2.1(e) Facilitate the development and expansion of recycling services for multi-family housing complexes. (NEW, Plan-1996)**

The need to increase the convenience and participation level of recycling within multi-family housing complexes remains. The County should accomplish this through increased public information, education programs, assistance with municipal contract revisions, and possible grant funding for capital expenditures.

A section titled "Recycling for Apartment and Condominium Residents" is included in the Spring 1995 edition of the Recycling Yellow Pages. This information was revised for the Spring 1996 edition of the *Waste Reduction Directory* (formerly the Recycling Yellow Pages). The Solid Waste Department should research the feasibility of sending a copy of the *Waste Reduction Directory* to all multi-family complex owners/managers in the County. This would provide an opportunity for informing this sector about the availability of the *Waste Reduction Directory* and possibly a grant program. It would also provide an opportunity to survey this sector for waste generation information.

The County should consider assisting municipalities in requiring their haulers to provide multi-family recycling services in their solid waste and recycling services contracts.

The County should utilize its Internet Home Page to disseminate this information when and where applicable.

**4.2.1(f) Document the recycling levels of the residential waste stream. (EXISTING, Action #13, Plan-1991)**

**STATUS**

County-wide recycling levels are documented in the DuPage County *Solid Waste to Date Annual Report*. Copies of the annual report are on file and available for public review.

The County currently sends out recycling surveys to municipalities and townships to obtain recycling data. However, information is not always provided by the hauler to the

municipality or township. Attempts have been made by the County to obtain this information directly from the hauler(s), but efforts have not always been successful.

The Solid Waste Committee has discussed this situation and some options to develop a new system that will be more successful in determining recycling levels in the County. If data is gathered directly from the source (i.e., refuse and recycling haulers), there is less chance for inaccurate or inconsistent records.

**RECOMMENDATIONS**

The County should continue to collect refuse and recycling data from municipalities, townships, waste haulers, and recycling service providers and include the results in public information provided by the Department such as the *DuPage County Waste to Date Annual Report*.

Reporting methods should continue to be evaluated and revised to attain optimal data input. Municipalities should be encouraged to enforce reporting provisions included in their waste hauler contracts and obtain residential and commercial refuse and recycling data. The County may investigate a software program that will enable data input to be completed by the waste generator. This program should be capable of calculating the amount and type of waste generated per month as well as estimating the annual quantity of municipal waste generated throughout the County.

By continually evaluating and revising reporting methods, a more accurate, consistent and timely data collection system will evolve to be utilized for state reporting, municipal contract negotiations, the evaluation of programs, and the promotion of successful programs.

**4.2.1(g) Research the feasibility of coordinating the implementation of volume-based solid waste collection systems for all residents in the County. (NEW, Plan-1996)**

At the end of 1995, ten municipalities had volume-based solid waste collection systems, five had modified volume-based collection, sixteen had flat-fee systems, and one offered collection with no direct charge to residents.

A volume-based solid waste collection system is where residents pay for each bag of waste they set out for disposal. Research has shown that this type of collection system may offer an economic incentive to residents. Generally, the less waste they generate and the more they recycle reduces the amount of waste they dispose and increases their cost savings. (This economic incentive may be more applicable to non-affluent communities.) Some communities are not in favor of a volume-based system since larger families or large waste generators may pay more through this system than on a flat-rate system. On a flat-rate system, all residents in a municipality equally share the cost of solid waste collection regardless of family size or waste output. A combination of the volume-based method and

flat-rate system is the modified volume-based system. The modified volume-based system requires that all residents pay a flat fee for a certain number of bags and pay on a volume-based system for additional refuse. This type of collection system may also offer an economic incentive.

Therefore, since there may be many variables involved in setting up or converting to a volume-based system, the County should research the feasibility of promoting a volume-based system for all residents in the County.

**4.2.1(h) Develop a county-wide public awareness and information program utilizing outlets for such distribution of information. (EXISTING, Action #14, Plan-1991)**

The last paragraph in Section 4.0 of Plan-1991 states that "The County is currently performing activities in the minimum level program. As the County's program activities expand and resources develop, expansion of the education and information program to intermediate and high profile levels should be considered." The following section addresses actions taken within each education and information programming level.

**MINIMUM LEVEL PROGRAM**

**(i) Resume printing of a Solid Waste Newsletter on a regular basis and distribute to individuals on an existing and an expanding contact list at the County. (EXISTING, Action #14, Plan-1991)**

**STATUS**

In March 1993, the Solid Waste Division of the Department of Environmental Concerns distributed the first and only edition of a new newsletter titled "Waste Watch." The newsletter's purpose was to update municipalities and townships on solid waste programs provided by the County, the latest trends and developments in the solid waste field, and current legislation and regulations affecting local solid waste programs and issues facing the County.

**RECOMMENDATIONS**

The Solid Waste Department is currently developing plans for a pilot Post Office District/DuPage County Solid Waste Newsletter. In October 1995, the Northern Illinois District of the United States Postal Service approached regional solid waste organizations about a joint newsletter concept. Half the newsletter would be dedicated to solid waste information specific to each participating solid waste organization. Current plans are to produce a Spring/Summer 1996 edition in which the DuPage County version would be delivered to approximately 400,000 businesses and households in the County. Potential funding from the Northern and Central Illinois Post Office Districts, Illinois Department of Commerce and Community Affairs,

and DuPage County, and other participating solid waste organizations in the region should make this pilot project possible.

Department publications such as the *Waste Reduction Directory (formerly the Recycling Yellow Pages)*, *Waste To Date Annual Report*, *Leaders in Waste Reduction and Recycling*, *Household Hazardous Waste Reduction & Collection Alternatives* brochure, Education Center brochures, and the Post Office District/DuPage County *Solid Waste Newsletter* should adequately update municipalities and townships on solid waste programs provided by the County. Therefore, a separate solid waste newsletter may no longer be necessary.

However, the Solid Waste Department should continue to update and expand its distribution and mailing lists for sending out public information. For example, the distribution list for the Spring 1996 edition of the *Waste Reduction Directory* includes additional delivery points such as park districts and chambers of commerce.

The County should utilize its Internet Home Page to disseminate this information when and where applicable.

(ii) Provide mass appeal informational material. (EXISTING, Action #14, Plan-1991)

#### **STATUS**

Local public information materials have been developed by or in coordination with the Solid Waste Department over the last six years. The list of publications includes: *Waste Reduction Directory (formerly the Recycling Yellow Pages)*, *Reduce Waste & Recycle Guides* for businesses, outdoor composting and lawn recycling brochures, *New DuPage Shopper* produced by the DuPage Environmental Awareness Center, *Ripples* newsletter produced by the school outreach program of the Education Center, *Waste Watch* newsletter, *White Paper on White Goods* newsletter, *DuPage County Waste to Date Annual Reports*, *DuPage County Solid Waste Education Center* brochure, and the *DuPage County Solid Waste Department* brochure.

The Solid Waste Department and its Education Center contractor have also distributed public information materials that exist in the public domain for use by interested parties. Over 20 different types of publications have been distributed including topics on managing household hazardous waste, resources for recycled-content products, commercial waste reduction and recycling, and industrial materials exchange. These publications have been developed by federal and state government agencies and local associations including the Illinois Environmental Protection Agency, Illinois Department of Energy and Natural Resources, United States Environmental Protection Agency, Illinois Chamber, DuPage Environmental Awareness Center, Greater Chicago

Recycling Industry Council, University of Illinois/Office of Solid Waste Management, and Illinois Recycling Association.

**RECOMMENDATIONS**

The Solid Waste Department should continue to distribute and develop, or coordinate the development of, local solid waste information materials.

The Solid Waste Department should also continue to distribute publications developed by local, state, and federal government agencies and associations.

The Solid Waste Department should provide mass appeal informational material via the DuPage County Internet Home Page.

The scope of the County's educational activities will include the Forest Preserve District acknowledging the heavy use of the District's facilities as well as the need to make waste reduction and recycling easy and convenient for the public. These programs could also include organized education and implementation with special events organizers throughout the county.

**(iii) Provide clearinghouse capability for information requests. (EXISTING, Action #14, Plan-1991)**

**STATUS**

The Solid Waste Department maintains and continues to develop an extensive solid waste library consisting of local, regional, national, and international public information materials available for use by interested parties. The Department's clearinghouse has become a credible and diverse source of information.

In addition, the Education Center has a resource room available to the public which contains over 100 videos; more than 125 books related to waste reduction, recycling, composting, and hazardous waste; assorted curriculum guides for grades K - 12; numerous pamphlets concerning solid waste topics; and industry-specific magazines related to solid waste, recycling, composting, and new technologies.

**RECOMMENDATIONS**

The Department should strive to centralize more public information materials into its library when possible. In addition, the Department should obtain updated versions of existing library materials where applicable. Furthermore, the Department should update the library's catalog as materials are centralized.

The Department, through its Education Center contractor, continues to add new materials to the Education Center's resource room and provides an updated catalog for each material type (i.e., list of videos available).

The Department should provide clearinghouse access for information requests via the DuPage County Internet Home Page.

**(iv) Continue regular intergovernmental network meetings but strive for format which encourages local reports and attendance by elected officials. (EXISTING, Action #14, Plan-1991)**

***STATUS***

The County continues to conduct regular and special call Solid Waste Committee meetings. Regular meetings are typically scheduled for the first Wednesday of every month and special call meetings on the third Wednesday of every month. The Committee consists of six municipal representatives and six County Board members. The current format of these meetings encourages local reports and attendance by elected officials. Each meeting agenda is distributed to local press members, municipalities, townships, DuPage Mayors and Managers Conference, Committee members, DuPage County government departments and contractors, special interest groups, local haulers, and interested individuals.

***RECOMMENDATIONS***

The County is accomplishing this minimal level program item on an on-going basis.

**(v) Continue general meetings with public as requested. (EXISTING, Action #14, Plan-1991)**

***STATUS***

The Solid Waste Department Director and staff members make public presentations and attend public meetings upon request and as resources allow. Individual Solid Waste Committee members also attend public meetings when appropriate and when their schedules allow.

***RECOMMENDATIONS***

The County is accomplishing this minimal level program item on an on-going basis.

## INTERMEDIATE LEVEL PROGRAM

- (i) Develop and implement information programs for schools. (EXISTING, Action #14, Plan-1991)

### *STATUS*

The DuPage Environmental Awareness Center (DEAC) founded the School Recycling Assistance Program (SCRAP) in August 1990. SCRAP pilots new school recycling programs, expands existing school recycling programs, authors the SCRAP newsletter, and holds educational and instructional workshops on recycling. SCRAP trains teachers, administrators, school staff, students, and parent groups on the basics of waste reduction and recycling including handling, collection, storage, personnel, economic feasibility, motivation, and environmental impact. From August 1991 to February 1995, DEAC sponsored the program with operational funding from the County.

In spring 1994, the County entered into an agreement with Jack Kaufmann, an environmental educator and performer, to provide environmental musical presentations on waste reduction and recycling to DuPage County schools. The County has funded half the cost of these presentations, with participating schools paying the other half. From February 1994 to May 1995, Jack Kaufmann has given 69 presentations to 41 DuPage County schools.

In March 1995, the County entered into an agreement with School and Community Assistance for Recycling and Composting Education (SCARCE) for operation of the Education Center. As a part of this agreement, SCRAP became a school outreach program of the Education Center. This agreement is in effect through February 1997.

In October 1995, the County entered into a third agreement with Jack Kaufmann to fund 50% of the cost of his multimedia environmental presentation in schools. The County also entered into a new agreement with Gaia Theater to fund 50% of the cost of their highly interactive theatrical production called "Use it Again" in schools. The term of both contracts is for the 1995-1996 school year.

### *RECOMMENDATIONS*

The County should continue to fund part of such performances Jack Kaufmann's in schools so that more schools and students can benefit from these educational and highly motivational environmental presentations. The County should also consider funding a portion of these performances in other locations frequented by children (i.e., public libraries, park districts, and community events) and researching other environmental performance offerings.

By the end of December 1995, the Education Center has presented to more than 22,000 visitors since it opened in December 1993. Also, during this time staff has conducted over 200 tours for approximately 80 schools. As part of SCRAP the school outreach program of the Education Center, staff has given more than 425 presentations to approximately 30,000 students during 1995. With the total County population approaching one million people, the County should continue funding the successful operation of the Education Center to educate more school children and the public on the solid waste management issues they face.

**(ii) Develop and expand working relationships with grass roots and special interest organizations as well as trade groups. (EXISTING, Action #14, Plan-1991)**

***STATUS***

The Solid Waste Department has and continues to attend and give presentations at municipal and township meetings, business and trade groups, grass roots organizations, and public events. In addition, the Education Center contractor is engaged to operate a community outreach program to educate civic organizations, business groups, clubs, and other organizations on waste reduction, reuse, recycling, and other solid waste management issue as approved by the County.

***RECOMMENDATIONS***

The Department should continue to foster working relationships with public organizations and groups for creating or increasing public awareness while distributing and sharing information.

**(iii) Investigate and utilize resources available through public service/community access media outlets. (EXISTING, Action #14, Plan-1991)**

***STATUS***

The Solid Waste Department utilizes the County Public Information Office for press release development and distribution to newspapers, radio stations, and cable television stations. In addition, staff has on-going communications with press members at the Department office, by phone, at Solid Waste Committee meetings, and at a variety of other public meetings and events.

In May 1994, Solid Waste Department staff worked with a cable station to produce a video of the recyclables processing floor in operation at the IPF. The cable station donated the video to the Education Center. The video is used during tours that are scheduled when the processing floor is not in operation.

The Education Center contractor has and continues to actively work with local newspapers, cable stations, and radio stations as a means of utilizing local resources to publicize events and educate the public on the County's solid waste education programs. Articles have appeared in approximately 18 different newspapers. In addition, Education Center staff has made numerous appearances on six cable stations covering topics on waste reduction, reuse, recycling, recycled-content products, and worm composting.

***RECOMMENDATIONS***

The Department should continue to investigate and utilize public information services such as newspapers, radio stations, cable television stations, and the Internet for creating or increasing public awareness while distributing and sharing information.

**HIGH PROFILE PROGRAM**

- (i) Initiate promotional activities. (EXISTING, Action #14, Plan-1991)

***STATUS***

Since December 1991, SCRAP has issued Earth Flag awards to schools. DuPage County schools which meet specified waste reduction and recycling goals are awarded Earth Flags in recognition of their achievements. The awards are presented during Earth Flag ceremonies which are attended by the student body, teachers, staff members, and parents. From December 1991 to June 1995, 186 schools have been awarded Earth Flags. This represents approximately 60% of all DuPage County schools.

In the 1993-94 school year SCRAP began a new vermicomposting and outdoor composting pilot program for third - eighth grades. Schools who participate in a vermicomposting or outdoor composting project and have already earned their SCRAP Earth Flag are eligible to apply for this pilot program funded by the Solid Waste Department. Schools who meet specific vermicomposting goals receive a Worm Composting Streamer Award to attach to their Earth Flag. Schools who meet specific outdoor composting goals receive an Outdoor Composting Streamer Award. As of June, 1995, Composting Streamers have been awarded to 70 vermicomposting and 10 outdoor composting programs.

***RECOMMENDATIONS***

The County should work with state agencies and on its own to offer grants for projects such as funding the transportation cost for schools to attend the Solid Waste Education

Center field trips and funding school playground renovations that utilize recyclable materials.

The Education Center staff should continue to work with school officials, educators, parents, and students to set up waste reduction and recycling programs in schools that have not benefited from this program to date. A recognition goal should be to fly or display Earth Flags in as many DuPage County schools as possible.

Some school districts do not allow Earth Flags flown outside their schools due to logistics or a lack of equipment. As of January 1996, this policy has affected approximately 30 schools. Therefore, the Department is currently looking into an alternative recognition award for these schools. A recycled-content plaque may be an alternative.

With many more schools eligible for participation in the vermicomposting and composting program, the Education Center staff should continue to promote composting in the schools and award goal achievers. Similarly, schools not allowed to fly composting streamers outside their schools may receive an alternative award for their efforts. The addition of a composting plate attached to the Earth Flag plaque may be an alternative.

Promotional activities should be a key element of a waste reduction grant program for businesses and multi-family dwellings. The County should give these sectors recognition utilizing various media including press releases, newsletters, the Internet, and award ceremonies.

**(ii) Solicit regional and national coverage by preparation of articles for journals and presentations of papers at conferences. (EXISTING, Action #14, Plan-1991)**

#### ***STATUS***

Staff has made numerous appearances at conferences and seminars to promote awareness of the County's innovative programs in the fields of processing capability for recyclables and landscape waste.

#### ***RECOMMENDATIONS***

Staff should continue to attend conferences, workshops, and seminars to present the County's efforts and achievements in waste reduction. Additionally, staff should prepare articles for publications to help establish regional and national interest in the County's programs.

**(iii) Develop mass media programs. (EXISTING, Action #14, Plan-1991)**

**STATUS**

In December 1992, the County entered into an agreement with Slack Brown & Myers (SB&M) to assist in the design, development, and operation of a solid waste education center. The goal of this agreement was to build upon existing solid waste education programs and to provide an integrated educational effort to reach all segments of the population including residents, schools, and commercial establishments. Tasks completed by SB&M under this agreement included selecting and training education center staff, designing a program outline of solid waste education in the County, developing educational materials and programs, pursuing alternate funding sources, and designing a solid waste education resource center.

**RECOMMENDATIONS**

Due to the potential high costs involved, the County should carefully consider this high profile program component. Contracting with a professional firm to develop a marketing campaign should only be considered after all preceding action items for county-wide awareness and information have been addressed.

**4.2.1(i) Pursue additional funding resources. (EXISTING, Action #15, Plan-1991)**

**STATUS**

In 1990, the County received a \$100,000 grant from the Illinois Department of Energy and Natural Resources (ENR) for the purchase of a windrow turning machine for the County's compost site in West Chicago.

Since 1992, SCRAP, working together with the Regional Office of Education, has been awarded four ENR grants totaling over \$88,100. These grants have been used by schools for waste reduction and recycling educational programs and supplies including school classroom recycling bins, toters, canvas lunch bags, reusable lunch trays, dishwashers, indoor and outdoor composting bins, reusable milk bottles, bus rentals for field trips, and to cover the cost differential on a copier purchase to enable a school to have a copier with duplexing capability.

In July 1993, the Solid Waste Department received a \$50,000 grant from ENR to expand and enhance the County's In-House Recycling Program. Since the expansion of the In-House Program, the waste diversion rate for the County complex has increased from 3% to 33%.

**RECOMMENDATIONS**

The County should continue to aggressively pursue additional funding from state and federal agencies, private industry, and other sources for its programs.

The Department should continue to identify and pursue additional funding sources for educational programs and materials for the Education Center.

Refer to Section 3.3.2 regarding legislation pertaining to surcharge revenues from solid waste facilities and planning grants.

#### **4.2.2 Commercial/Industrial/Institutional Recycling**

##### **4.2.2(a) Strongly encourage private business to actively pursue recycling and waste reduction practices, as well as to procure secondary materials. (EXISTING, Action#16, Plan-1991)**

###### **STATUS**

The Solid Waste Department has actively responded to business inquiries on implementing or expanding waste reduction and recycling programs via phone consultation, on-site business visits, and publication distribution.

The Education Center staff assists businesses as part of their community outreach program. Businesses tour the Education Center and receive on-site visits from staff to assist them in pursuing waste reduction and recycling practices and in purchasing recycled-content products.

The Commercial Recycling section of the *Recycling Yellow Pages* offers businesses information on recycling opportunities for various types of office products and an industrial materials exchange.

The *Reduce Waste & Recycle* guide booklets developed by the University of Illinois Cooperative Extension Service (CES) were produced to educate and encourage private businesses to reduce waste and recycle (see Section 4.2.2(b)).

###### **RECOMMENDATIONS**

Private business should be encouraged to pursue waste reduction practices and procure recycled-content products through a County assisted commercial outreach program. Businesses may have the opportunity to participate in an outreach program or at least receive free promotional and educational information for their own program implementation.

Increasing disposal costs should also encourage many businesses to implement waste reduction programs in the near future.

The Solid Waste and Education Center staffs should continue to assist businesses on a one-on-one basis as requested.

The Solid Waste Department should continue to revise the Commercial Recycling section of the *Waste Reduction Directory (formerly the Recycling Yellow Pages)* to offer businesses up-to-date information on waste reduction opportunities. In addition to Commercial Recycling section, of the Spring 1996 edition also includes new information such as Construction and Demolition Recycling.

The County should utilize its Internet Home Page to disseminate this information when and where applicable.

**4.2.2(b) Expand the commercial/institutional/industrial outreach program. EXISTING, Action #17, Plan-1991)**

**STATUS**

From July 1992 through June 1993, the County contracted with CES to produce waste prevention guides for the commercial, institutional, and industrial outreach program. As a result, CES created five *Reduce Waste & Recycle* guide booklets for hospitals, theaters, office buildings, automotive repair shops, and hotels/eating and drinking establishments. In addition, the program trained individuals to become master commercial recyclers who could develop and implement successful recycling and waste reduction programs in businesses.

The Solid Waste Committee is also currently evaluating options for a Commercial Outreach Program for waste reduction and recycling education.

In March 1996, the County entered into an agreement with DuPage Clean and Beautiful to conduct a DuPage County corporate waste reduction/recycling survey. The main goals of this survey were to gather reliable and significant waste handling data from various sizes of businesses to determine the need and interest of businesses to reduce their waste, and to notify businesses about impending landfill closures and an anticipated increase in disposal costs. Results from this survey are due in June 1996.

**RECOMMENDATIONS**

Survey results should indicate that the County will need to foster the development of a pilot commercial outreach program for businesses. This program should include workshops and educational materials emphasizing a variety of waste reduction techniques and applications. Participants should be required to report refuse and recycling figures along with waste reduction results to measure the success of the program and attribute recognition to participants. This should inspire more businesses to implement a commercial outreach program. Based on the pilot commercial outreach program's success, the County should assist extending this program to include a wider variety of commercial establishments.

The County also recommends, if permissible through their contract, continuing the Solid Waste Education Center Operator's commercial outreach program to further assist businesses with waste reduction strategies. Another goal is to enhance the Solid Waste Education Center's resource room to include more commercial reference materials and product displays targeting DuPage County businesses.

Furthermore, if voluntary methods do not prove successful, the County should review several mandatory recycling ordinances to determine the feasibility of requiring commercial establishments to reduce their waste through recycling.

**4.2.2(c) Document the recycling levels from the commercial/institutional/industrial waste stream. (EXISTING, Action #18, Plan-1991)**

**STATUS**

The Solid Waste Committee has discussed a licensing system for providers of recycling services in this sector to allow for the County to solicit information on levels of service. A licensing system has not been implemented on a County-wide level. The communities of Burr Ridge and Wayne license haulers to conduct business within their jurisdiction and allow individuals to contract directly with the licensed hauler of their choice.

Since 1992, the County has requested recycling data from the commercial/institutional/industrial waste stream through voluntary recycling surveys distributed to all County municipalities and townships. However, the County has been unable to accurately obtain a large portion of this data due to the fact that most County municipalities do not require businesses or haulers to report the amount of commercial refuse or recyclable materials generated. In addition, recyclables processing centers and final disposal facilities are not required to report materials processed or disposed from each county. The DuPage County *Waste To Date Annual Report for 1992 and 1993* lists commercial data reported from just a few municipalities and the IPF which represents a minute portion of the commercial waste stream for the County.

In spring 1995, voluntary surveys were distributed soliciting commercial data from municipalities and townships for the 1994 Annual Report and Plan-1996 Update. Due to minimal response on commercial data from municipalities, in summer 1995 confidential surveys were distributed directly to haulers who service the County in an effort to capture a larger portion of this data. As of September 1995, only a small portion of the haulers surveyed have responded.

**RECOMMENDATIONS**

Since the County has been unable to accurately obtain a large portion of commercial/institutional/ industrial data from collection service providers, municipalities,

or townships, the County should consider funding and administering a commercial waste generator survey project.

The Solid Waste Department should continue to distribute voluntary surveys soliciting commercial data from municipalities, townships, waste haulers, and recycling service providers until the County or local government units implement ordinances, licensing systems, or survey projects that produce more accurate results.

**4.2.2(d) Encourage the siting and development of the industries that use secondary materials in the DuPage County area. (EXISTING, Action #19, Plan-1991)**

**STATUS**

Though Solid Waste Department staff has actively encouraged private development of industries that use secondary materials on a case-by-case basis, an organized, focused effort has not been implemented.

**RECOMMENDATIONS**

The County should continue to support private industries that develop products using secondary materials. As a result of County funding, Churchill School in Glen Ellyn was able to select a playground renovation company which uses ground up tires to create a shock-absorbing, protection overlay playground surface. In addition, a specific educational effort should be developed to encourage additional industries to utilize recyclable materials in their manufacturing processes. For example, by promoting the Industrial Material Exchange Service (IMES), an information clearinghouse, directory, and marketing facilitator for industry's reusable materials, industries will have a greater opportunity to take advantage of listings of material suppliers and potential end markets.

**4.2.3 Public Sector Recycling**

**4.2.3(a) Develop guidelines for the County's procurement of recycled products. (EXISTING, Action #20, Plan-1991)**

**STATUS**

In 1990, the County's Purchasing Department drafted a resolution specifying the guidelines for procurement of recycled products. The resolution was submitted to the Finance Committee for review. Committee members expressed concern over a few of the selected recycled products and the differential cost percentage for recycled products. The resolution was sent to the Solid Waste Committee to be amended. Records indicate that the resolution for the guidelines for procurement of recycled products was never adopted by the County.

Therefore, the County will need to revise the procurement guidelines, formulate a comprehensive waste reduction policy for County offices that will include minimizing the use of highly toxic and disposable products, and obtain County Board approval. Then, the County can encourage local units of government to create similar procurement standards.

#### **RECOMMENDATIONS**

The County needs to re-evaluate and revise the previously drafted guidelines for the procurement of recycled products. A comprehensive waste reduction policy for the County facilities needs to be established and executed to minimize the use of highly toxic and disposable products. The County should periodically review and revise its procurement guidelines and routinely consider products and supplies that are non-toxic, reusable, durable or made from the highest recyclable material content when it is both practical and prudent. Then, the County should encourage local units of government to create and abide by similar procurement standards.

**4.2.3(b) The County should itself practice and assist other local governments including the Forest Preserve District in the design and implementation of in-house recycling, waste reduction, and procurement programs. (EXISTING, Action #21, Plan-1991)**

#### **STATUS**

In April 1992, the DuPage County Board appointed an Environmental Commission to develop an environmental policy for the County. In April 1993, the County Board was presented with this policy. Solid Waste is one of several environmental action areas covered by this policy. This action area includes statements that the County will evaluate and implement all feasible source reduction/recycling alternatives, include a procurement program that encourages the selection of recyclable products, and establish aggressive programs to rid the solid waste stream of toxics.

In 1993, the Department of Environmental Concerns adopted a waste reduction policy in an effort to go beyond recycling and initiate waste reduction and reuse strategies. Specific waste reduction and reuse guidelines are outlined in this policy such as two-sided copying, editing documents on the computer, and centralized filing systems. The primary objectives of this policy are to reduce waste produced by the Department and establish a successful waste reduction program for other County departments to adopt.

In February 1994, the Solid Waste Department instituted a local government cooperative purchasing program for xerographic paper. The Department surveyed all DuPage County governmental units requesting information on their 1993 purchasing volumes and delivery requirements for xerographic paper. Positive responses were then combined into the County's xerographic paper bid specification. The County selected the lowest bidder in April 1994. By December 1994, 29 entities purchased 39 million sheets of xerographic paper at a low rate through the cooperative purchasing program. Since early 1995, the

County has been purchasing on the spot market for paper. A cooperative purchase should be reinstated when the County goes out to bid again for paper.

The DuPage County Purchasing Department procures a variety of recycled-content products for use by County employees located throughout the government complex. Recycled-content products include janitorial paper supplies such as toilet paper and paper towels, various types of office paper products including copier paper, note pads, and file folders, and laser printer toner cartridges.

The DuPage County In-House Recycling Program was expanded with a grant from the Illinois Department of Energy and Natural Resources. During the grant period from June 1993 to March 1995, the County government complex collected over 2,700 cubic yards of recyclable material. The collection program includes a variety of recyclable materials such as several types of office paper, newspaper, corrugated cardboard, aluminum, glass, motor oil, oil filters, automotive batteries, and tires.

#### **RECOMMENDATIONS**

The County should continue to pursue its cooperative purchase program for paper and other materials and obtain additional recycled-content products when economically feasible.

The County should continue to evaluate and expand its own In-House Recycling Program, explore new in-house waste reduction opportunities, and share its efforts and results with local governments.

#### **4.2.3(c) Document the recycling levels from the public sector's waste stream. (EXISTING, Action #22, Plan-1991)**

#### **STATUS**

The County provides municipalities and townships with quarterly recycling surveys. The commercial recycling report form is used to document recyclables accumulated at their local businesses, schools and in-house recycling programs. After calculating the tonnages, this data is consolidated into the annual report.

The County's in-house recyclables are also documented under commercial recycling figures in the annual report. Monthly reports are provided to the County by various sources including Environmental Recycling, BFI, Waste Management Inc., and the IPF. These reports itemize the tonnages of recyclable materials acquired from the County. The tonnage totals are then incorporated into the annual report.

**RECOMMENDATIONS**

In order to document waste diversion at local businesses, schools, and local government in-house recycling programs the County should survey waste generators directly at the source. To accomplish this goal, the County should consider using an outside source, such as a college marketing department or an environmental group, to survey the majority of commercial waste generators located in DuPage County. By gathering refuse and recycling data directly from the source the data will be highly consistent and accurate. The results can then be used for state reporting, program evaluations, promoting successful programs, negotiating municipal refuse and recycling contracts as well as being a valuable source to be documented in Department publications such as the *DuPage County Solid Waste to Date Annual Report*.

**4.2.4 General Recycling**

**4.2.4 (a) Establish a new target recycling goal of beyond 25% after 1996. (NEW, Plan-1996)**

4 15 ILCS 15/6, (1994), requires that by the third and fifth years of a recycling program, the County should meet recycling goals of 15% and 25% respectively.

It is unknown when the State of Illinois may amend this section of the Solid Waste Planning and Recycling Act. Since the County should meet or exceed the 25% goal by the end of 1996, the County should develop new target recycling goals greater than 25% during the Plan-1996 period.

**4.3 CONSTRUCTION AND DEMOLITION**

**ACTION ITEMS DELETED FROM PLAN-1991**

None.

**4.3.1 Goals for the reduction in this component of the waste stream should be parallel with other County recycling goals. The County should encourage steps leading towards a minimum reduction in this waste component of ~~15~~ 25 percent in three years and ~~25~~ 50 percent within five years. This action will require the involvement of the Forest Preserve District in limiting the materials to be accepted at its landfill sites. (REVISED, Action #23, Plan-1991)**

**STATUS**

In 1992, the two DuPage County landfills were ordered to close no later than the end of the year 2000. This order has resulted in dramatic increases (fourfold at Greene Valley, twofold at Mallard Lake) in incoming refuse at both landfills. As a result, the site operators also decided to increase the intake of construction & demolition (C & D) materials. A majority of these materials (wood, concrete, asphalt, bricks) are used as road base to accommodate the increased truck traffic. The effort, therefore, in trying to encourage the landfill to remove this component will be easier to accomplish as the need for material diminishes (i.e., incoming volumes are lower.) A recent *Waste Stream Characterization Study* (February 17, 1995) indicated that about 34% of all waste generated within DuPage County and deposited at both county landfills was C & D material. The study summarized the C & D components as follows:

Dirt/Rubble/Rocks	62.4%
Wood	13.0%
Concrete	11.2%
Masonry	6.7%
Roofing Shingles	3.6%

*(Does not equal 100%, rounded)*

Additionally, the Solid Waste Department has been encouraging recycling market development for C & D materials through meetings with representatives of various handlers of C & D components. In expanding new markets, it will make disposal of those C & D less economical at the landfill, and better for reuse/recycling. Formal surveys will be conducted this fall with developers and subcontractors through a regional association. Recent legislation (SB789) has changed the amount of time allowed for offsite waste storage. The Department has met with representatives of the IEPA to more clearly define C & D materials. By developing clearer definitions of C & D, and legislation that encourages recycling of C & D materials, the Department hopes to encourage diversion of these materials from the landfills.

Currently, due to the lack of an established reporting system, it is not known if the C & D recycling goals mentioned in Plan-1991 have been attained. The Solid Waste Department will explore methods whereby recycling and disposal of these materials can be more easily reported. Available C & D recycling data is provided in the DuPage County *Waste to Date Annual Report* for 1992 and 1993. The information stated that 41,500 tons of C & D

materials were recycled by municipalities in 1993. Items recycled included asphalt, concrete, steel, gravel, and clay.

**4.3.2 The implementation of programs to achieve the goals stated in Recommendation 1 should proceed in a phased manner. The following methods to reduce or recover materials should be considered. They are listed in ascending order of anticipated costs for implementation. (EXISTING, Action #24, Plan-1991)**

**STATUS**

- A. Non-acceptance of uncontaminated soil/clay at disposal sites unless used for cover operations or grading.

Soils/clay intake at DuPage landfills is currently at a minimum. Both landfills extensively utilize alternate daily cover materials such as plastic tarps and reject paper pulp in place of and with soils/clay.

- B. Limitation of asphaltic aggregate and concrete/brick and encouragement of recycling/reuse.

As previously mentioned, DuPage landfills are currently accepting large amounts of this material as roadbase. Additionally road building projects, are now incorporating recycled asphalt into the road. This requires additional machinery, but may be more economical if the project is large. Several plants accept the asphalt, concrete and recycle it into new material. Concrete and brick are also used as a roadbase at the landfill, and both can be reused if properly separated.

- C. Limitation and diversion of wood products and similar products for alternative use.

Wood has been extensively used as a roadbase at one DuPage landfill, due to the large traffic volumes. Wood, however, does have other reuse/recycle markets, such as for building materials, mulch, and animal bedding (when ground), and fuel. Drywall is another product that has reuse capability. One method is to land apply it (when properly ground and paper is removed) where there are proper soil conditions. Another application is to add it to the concrete mix, which helps in the concrete process. A few Midwest gypsum plants (Sperry, Iowa, East Chicago, Indiana) will accept drywall for the purposes of recycling it back into gypsum. The Solid Waste Department is coordinating the effort to enhance the marketability of both wood and drywall.

**4.3.3 The County will focus on reducing the C & D materials that will be leaving DuPage County for disposal once the two DuPage landfills close. (NEW, Plan-1996)**

**RECOMMENDATIONS**

This action is needed to reduce the transport and disposal of C & D materials, and thus, the overall disposal costs to DuPage businesses and residents. The C & D materials that will be focused on will be wood, concrete, masonry, roofing shingles, drywall plaster, and scrap metal items. Old corrugated cardboard, though not officially classified as a C & D component, is generated at construction sites in large volumes, and should be included in a C & D recycling program. Land clearing debris (generally landscape waste) is also generated at C & D sites, but there are disposal mechanisms already in place for such waste (compost sites). Also, less land clearing is being done due to the demand for more trees for environmental/aesthetic reasons.

Recycling of the C & D component has not been addressed by many communities in North America. Few successful programs are currently in place (Portland, Oregon, and Los Angeles, California are the home of two such programs). One main concern with C & D materials is the availability of markets to maintain a consistent flow of material, so that materials do not accumulate at a recycling facility. The other concern is disposal rates, which drive the economics of recycling this material. Landfill tipping fees in DuPage County currently range around \$ 30.00/ton. Tipping fees must increase before it will make the additional handling of this material for recycling economical to the hauler, contractor or developer. In the areas where recycling of C & D has been marginally successful, the disposal rates exceed \$30.00/ton, and in highly successful situations, the rates exceed \$50.00/ton.

This Department will continue to conduct pilot projects whenever appropriate to understand firsthand the obstacles of recycling C & D in DuPage County. One major obstacle appears to be the lack of distinction between C & D materials and the general waste stream. A distinction is needed to remove siting and permitting barriers which currently inhibit establishment of C & D recycling facilities. Also, by increasing the amount of time allowed for storage in order to separate materials for recycling, the private sector will be able to take advantage of the economies of scale. The Solid Waste Department has developed legislation to address these areas.

Another obstacle is the lack of markets for some C & D materials. Consequently, the Solid Waste Department met with representatives of firms that process materials such as drywall and wood for recycling and reuse. Markets for these materials are difficult to generate and maintain, and it will take much effort by anyone handling these materials before long-term solutions are attained. Markets are in place for ferrous and non-ferrous scrap and old corrugated cardboard (OCC). Asphalt and concrete are being reused more regularly in road building projects, and the trend appears to indicate that will continue.

**4.3.4 The County should reduce disposal of the C & D waste stream by 50% through reuse and recycling by the year 2000. (New, Plan-1996)**

**RECOMMENDATIONS**

This will reduce disposal costs to DuPage County residents, and benefit local businesses economically. The environment, of course, will benefit from reduced usage of natural resources. The balance of this section sets out a five-point plan for making progress towards the goal of reducing the C & D waste stream.

**4.3.5 In cooperation with the private sector, the County will promote whenever appropriate, legislation to enhance C & D recycling. (NEW, Plan-1996)**

**RECOMMENDATIONS**

One way this could be accomplished is to expand the State of Illinois' definition of C & D. The current definition only addresses the "clean fill" portion of C & D. If a more complete definition were inserted into the State's requirements for waste storage/transfer, haulers would have adequate time to accumulate C & D recyclables, making the transport of materials more economical, and enhancing revenue generation from the sale of materials. DuPage County plans to promote these changes during 1996. Clearer definitions which would establish criteria for C & D recycling facilities will make it easier for hauling companies to know what is and is not acceptable (so non-permitted transfer stations do not become a problem), and as a result, more facilities should be established, and thus more material would be reused/recycled.

**4.3.6 The County will promote development of markets to ensure permanent recycling of C & D materials.(NEW, Plan-1996)**

**RECOMMENDATIONS**

Markets for C & D materials need to be developed for the recycling effort to remain consistent. This may be addressed through a grant program funded by the County. Assistance will also be available for promotion of grant monies from the State. The grant program will assist firms that dedicate funds towards related expenses which will establish or enhance the processing of C & D recyclables. Special consideration will be given to those applicants dedicating monies toward C & D materials that have poor markets. The amount available will be determined at a later date. Grant rounds will occur on an as needed basis. A maximum award may be offered to a given applicant for any one project. The applicant may be required to report the amount of C & D diverted throughout the following year. This will assist the Department in determining if the markets for C & D materials are developing adequately to assess the need to continue the program.

The second portion of the market development program will be to provide financial assistance to those businesses using (or converting) processed C & D materials. This financial assistance will be offered on a case-by-case basis.

**4.3.7 The County will promote waste reduction of C & D materials through a comprehensive educational program. (NEW, Plan-1996)**

**RECOMMENDATIONS**

As markets are being established in various segments of the C & D waste stream, education on "how to recycle" will be implemented. This would entail educating developers, contractors, haulers and residents about various outlets that accept that waste for processing/recycling, as well as those selling recycled content products. Waste surveys (audits) would be conducted to determine what is and is not currently "recyclable". This would assist the waste generator and hauler in saving on disposal through lower costs for recycling a percentage of their waste. Once the waste generator made a habit out of recycling, the recycling of C & D should be here to stay. This has been the case in the residential sector, as curbside recycling programs have proven to be quite successful.

Brochures will be developed utilizing the above information. These brochures will be distributed through various associations related to the C & D industry, and made available to the general public. Promotion of C & D success stories will be circulated through newsletters or press releases, and presentations at various associations. Beginning in January, 1996 representatives from the solid Waste Department and other organization began promoting recycling of C&D materials in various trade publications. Surveys will continue to be conducted whenever needed, to determine the status of the C & D recycling, to collect feedback from builders, and to create an awareness of recycling C & D material.

**4.3.8 Provision of equipment and facilities for construction/demolition waste recycling should be sought first from private developers. The implementation of any of the methods discussed in recommendations would logically first be incorporated at the present disposal sites. Other entrepreneurial interests may exist to provide facilities for this action throughout the County. (EXISTING, Plan-1991)**

**STATUS**

Implementation of C & D recycling at current disposal sites (landfills) has already been addressed. Thus far, limited interest for recycling C & D materials has come from private developers. However, recent informal surveys of developers/haulers have indicated a general willingness to recycle their waste, providing the site they used had a less expensive tipping rate than the closest landfill, and was in a convenient location. Development of C & D recycling facilities has not been adequately promoted thus far, but recently efforts

are being made. Regional promotion of such facility(s) is needed, and use of associations is one outlet that is currently being explored.

The County does currently own property that could be used for recycling of C & D materials, and a more thorough analysis is needed before the property could be considered would be taken. A C & D recycling facility that is County or privately owned could utilize private operator(s).

#### **RECOMMENDATIONS**

The County, as outlined in previous recommendations, will assist the private sector through legislative changes, market development, and educational and grant programs.

Promotion of regional facilities is another aspect of this segment. Other collar counties such as Will, Kane, McHenry and Lake generate large volumes of C & D waste. Therefore, there may be an opportunity for regional C & D recycling facilities. This may be promoted through organizations such as the Green Construction Council.

#### **4.3.9 The County will encourage the private sector to voluntarily implement C & D recycling programs, and adopt an ordinance if needed. (NEW, Plan-1996)**

It is important to note that this segment of the C & D recycling program would only be implemented if needed. An ordinance would be developed for the unincorporated portions of the County, and made available for municipalities, specifying that a builder submit a recycling plan prior to issuance of a building permit. The recycling plan would include the wastes the builder intends to generate and recycle, and what types of recycled content materials will be used in the construction. A demolition permit will include information regarding the amount of recyclables they intend to remove and overall waste generated. Those recycling the highest percentage of material could be given an award at the end of each quarter. The same may be given to those using the highest amount of recycled content.

#### **4.4 LANDSCAPE WASTE MANAGEMENT**

##### ***ACTION ITEMS DELETED FROM PLAN-1991***

##### **Action #28**

Efforts should be made to promote uniformity among the various landscape waste collection programs operating within the planning area.

**4.4.1 Public Education**

**4.4.1(a) The County should work in cooperation with the State and the municipalities to intensify public education campaigns which promote landscape waste reduction and backyard composting. (EXISTING, Action #27, Plan-1991)**

**STATUS**

Plan-1991 called for the County to increase homeowner awareness about the virtue of managing landscape waste in one's own backyard. The County has participated in cooperative public education initiatives with the State of Illinois and numerous municipalities aimed at achieving this goal. These efforts have ranged from the development and distribution of literature to participation in landscape waste management educational workshops and composting demonstration sites.

The County's education campaign began in 1990 in response to the statewide ban on the landfill disposal of landscape waste. The DuPage County Board banned open burning of landscape waste in the unincorporated areas in 1989. In order to maximize compliance with these restrictions, the Solid Waste Department has served as a clearinghouse for information about alternative management and disposal options for this portion of the waste stream.

The County developed its own educational materials intended to help homeowners manage as much of their landscape waste in their own backyard as possible. These materials include grass recycling and backyard composting brochures featuring "Y. Baggit." The Department also distributed additional educational materials developed by other sources including the State of Illinois. The County worked with State of Illinois agencies responsible for educating the general public about the landfill ban and alternative means of landscape waste management. On the local level, the Solid Waste Department helped establish backyard composting demonstration sites and participated in educational workshops sponsored by several municipalities.

**RECOMMENDATIONS**

The County should continue to work in cooperation with the State and the municipalities on public education campaigns that promote landscape waste reduction and backyard composting. Because the ban on landfill disposal has been in effect over five years, most homeowners will have become accustomed to not commingling landscape waste with regular refuse. There is an on-going need, however, to encourage residents to use on-site management techniques for landscape waste instead of relying upon curbside collection and regional composting sites. By managing grass clippings, leaves, and brush in their own backyard, residents can save time and money while reducing the number of landscape waste collection vehicles and commercial composting facilities. The County should renew its commitment to landscape waste reduction and recycling education.

**4.4.1(b) The County should develop and implement new innovative public education programs that promote landscape waste reduction and backyard composting. (NEW, Plan-1996)**

While the County has successfully developed and implemented a landscape waste reduction and recycling public education program utilizing a traditional approach, enhancing the effectiveness of this effort will require new and innovative techniques. Distributing brochures and establishing backyard composting demonstration sites has had an impact, but the County will need to consider more diverse and proactive methods if the message is to reach significantly more homeowners.

The County should work with other entities for assistance educating residents about landscape waste reduction and recycling. A more innovative approach will involve cooperative relationships with community groups, hardware stores, garden shops, and landscapers. The tools and techniques used for the landscape waste education program should be expanded to include a broad range of media, not just brochures and composting demonstration sites. The County should also research the landscape waste education efforts employed in other areas and adopt new, proven educational techniques.

**4.4.2 Landscape Waste Disposal Capacity**

**4.4.2(a) The County should monitor the adequacy of available landscape waste disposal capacity and (if required) continue to provide a processing facility for the diverted waste stream. (EXISTING, Action #29, Plan-1991)**

**STATUS**

Despite educational efforts aimed at promoting waste reduction and on-site recycling, many homeowners still seek off-site disposal options for their landscape waste. A lack of adequate processing capacity was identified in 1990 just prior to the implementation of the ban on the landfill disposal of landscape waste. In order to facilitate compliance with State law, the County established a landscape waste composting facility in West Chicago in June 1990. The 40 acre facility employed windrow technology and was the largest composting operation in Illinois until it closed in December 1992. Working in conjunction with interested municipalities, the County investigated the development of a new composting site, but the project was eventually abandoned during 1993.

In 1990, there were 106 permitted composting facilities in Illinois. By 1995, there were only 77 permitted sites remaining. This decrease is attributable to various factors including opposition from surrounding residential communities, more stringent regulatory and permitting requirements, and a trend towards larger, more centralized facilities. Private waste haulers and other entities that collect or generate landscape waste are now forced to travel greater distances to the more remote remaining composting sites. This is particularly true in DuPage County since the closure of the West Chicago facility in 1992. Because there

are no permitted composting sites in DuPage County, landscape waste must be transported to Will, Kendall, and other more distant counties for processing. There is one small transfer station for landscape waste being developed in West Chicago at this time. This facility received an IEPA permit in April 1996 and should be operational by mid-1996.

Increased travel time is one factor contributing to an increase in residential disposal cost charged by waste haulers. The average per bag/container fee for landscape waste in 1990 was \$1.17. By 1994, the average cost for residential landscape waste disposal had increased to \$1.41 per bag/container. The impact of the increased transportation distance has had a particularly heavy impact upon smaller landscaping firms that cannot afford to tie-up their limited number of vehicles for long-distance trips to remote composting sites. While transportation distances and disposal costs have increased, there appears to be adequate landscape waste processing capacity at facilities outside of DuPage County. At this time there is no indication that the existing composting and land application sites in the region are unable to accommodate the material generated by residents in DuPage County. While there has been an increase in the cost of landscape waste disposal, the County has not received any expressions of concern about this trend from municipal officials or residents.

#### **RECOMMENDATIONS**

From a broader policy perspective, higher costs may have a positive effect if more homeowners decide to manage their landscape waste in their own backyard in order to avoid higher disposal costs. The County should continue its efforts to monitor the availability of disposal capacity, however, because rising costs may eventually jeopardize compliance with the statewide ban on landfill disposal and the County's prohibition on open burning in the unincorporated areas.

The County should continue its work as an information clearinghouse. To facilitate compliance with restrictions on landscape waste disposal, the Solid Waste Department provides information regarding landscape waste collection services offered by private waste haulers and certain township highway departments. A listing of local composting facilities is also maintained for the benefit of residents who choose to haul their own materials to an alternative disposal site. Some smaller businesses, such as landscapers, also seek information about composting facilities.

**4.4.2(b) To assure maximum compliance with Illinois Public Act 85-1430, the County should continuously monitor and evaluate the efficacy of the diversion system. (EXISTING, Action #30, Plan-1991)**

#### **STATUS**

With the implementation of Public Act 85-1430, Illinois became the first state to enact a complete ban on the landfill disposal of landscape waste. During the first two years after the law went into effect, problems were experienced at processing sites for the diverted

waste stream. In fact, legislation was introduced in the General Assembly to amend or totally repeal Public Act 85-1430 at various times during this shakedown period. Eventually the "bugs" were worked out of the system and the call to return to the landfilling of landscape waste ceased. At this time, landscape waste diversion is considered to be a success and has evolved into a well-established component of Illinois' integrated waste management strategy.

**RECOMMENDATIONS**

The County should continue to monitor the efficacy of the landscape waste diversion system to identify problems that could jeopardize compliance with the landfill ban or the County's landscape waste burning ordinance. If such problems are identified, the County should act in conjunction with the State, municipalities, and the private sector to ensure the continued success of the landscape waste diversion program.

**4.5 HOUSEHOLD HAZARDOUS WASTE**

**ACTION ITEMS DELETED FROM PLAN-1991**

None.

**4.5.1 Overall Program**

**4.5.1(a) As part of the County's waste reduction program, pollution abatement should be aimed at minimizing the negative impact of potentially hazardous refuse on the environment. (EXISTING, Action #3, Plan-1991)**

**STATUS**

Plan-1991 recommended that the County increase the general public's awareness of the need to divert potentially hazardous wastes from the waste stream. The County's efforts at achieving this goal to date have typically centered on publicizing the availability of one-day household hazardous waste (HHW) collection events sponsored by the Illinois Environmental Protection Agency (IEPA). Limited pro-active HHW education efforts were made through the *Recycling Yellow Pages* and the Solid Waste Education Center.

The approach to HHW diversion outlined in Plan-1991 called for the identification or development of alternative means to manage potentially hazardous waste. To achieve this end, Plan-1991 suggested that the County seek out cooperative ventures with other public agencies and private firms. Since 1991, the County has:

- worked to maximize the number of IEPA one-day HHW collection events held within DuPage County;
- entered into an intergovernmental agreement with the City of Naperville to provide county-wide access to a permanent HHW collection site; and
- commenced negotiations with a private sector firm for the provision of a mobile HHW collection program.

### **RECOMMENDATIONS**

The County should follow through on the HHW management programs initiated pursuant to Plan-1991, but should shift the focus to a more integrated and pro-active approach.

#### **4.5.1(b) Pursue the implementation of an integrated household hazardous waste program. (NEW, Plan-1996)**

The ultimate goal of any HHW program is the elimination of potential hazardous waste materials from the waste stream. To get closer to realizing this goal, DuPage County should adopt an integrated approach including proactive public education, an aggressive Re-Use Program, and HHW collection as an option of last resort. By adopting a policy aimed at preventing HHW generation and managing materials with hazardous ingredients as a resource, not as waste, the County's program will achieve maximum effectiveness and cost efficiency. The balance of this section details the education, re-use, and collection components of the County's HHW program.

#### **4.5.2 HHW Education Program**

##### **4.5.2(a) The County should attempt to increase the general public's awareness of the need to divert these wastes from the municipal waste stream. (EXISTING, Action #3, Plan-1991)**

### **STATUS**

The County's HHW education efforts to date have been limited to short articles in the *Recycling Yellow Pages*, responses to telephone inquiries, efforts at the Solid Waste Education Center, and promotion of one-day IEPA collection events.

Segments in the *Recycling Yellow Pages* have explained the HHW problem, discussed the virtues of less hazardous products, and offered information about local businesses which provide disposal opportunities for materials like motor oil, lead-acid batteries, and antifreeze. Over 50,000 copies of the Spring 1995 edition were distributed to municipal and township offices, schools, libraries, park districts, businesses, and households throughout the County.

Public inquiries regarding HHW typically come in the form of telephone calls to the Solid Waste Department. Department staff answer questions from residents who have been referred to the County by their municipality, township, or waste hauler. The callers usually

have questions regarding disposal alternatives for HHW. The staff provides recommendations of purchasing only what is needed, use it up or give it away, and dispose of the remainder properly as outlined in the *Recycling Yellow Pages*. Many residents and businesses are sent a copy of the *Recycling Yellow Pages* as a result of their inquiry to reinforce the proper management guidelines.

The Education Center, which opened in December 1993, has assisted the County in increasing the general public's awareness of potentially hazardous wastes and their proper disposal through phone support, tours, and a product display located at the Education Center. The product display educates the public to be able to identify household hazardous wastes. In addition, adult visitors who tour the Education Center participate in a discussion about how to purchase only what is needed, use it up or give it away, and how to properly dispose of materials. Adult visitors also receive a copy of the *Recycling Yellow Pages*, *IEPA Guide to Automotive & Small Engine Product Disposal* brochure, and *IEPA Guide to Household Paint Disposal* brochure.

The Solid Waste Department has worked to maximize the number of IEPA one-day HHW collection events held within the County. The Department has assisted municipalities in filing applications for hosting a one-day collection event in their communities. This assistance has helped County municipalities become selected sites among the many applicants throughout the state. The County has also co-sponsored one-day events with municipalities. This offers the municipality application assistance; publicity from the County in the form of press releases, posters, flyers, and newspaper articles; and additional volunteer assistance from Department staff on the day of the event. The County's recent efforts have included hosting a one-day HHW collection event at the Intermediate Processing Facility (IPF) in fall 1994, coordinating and publicizing other in-county events, and attempting to find other means of managing HHW whenever possible.

Such efforts were aimed at increasing public awareness of HHW in general and the availability of special collection opportunities in particular. In late 1995 and early 1996, the County initiated a targeted education campaign advising residents about the availability of the City of Naperville's permanent HHW collection facility (see Section 4.5.2(d) below).

#### **RECOMMENDATIONS**

The County should increase the intensity of its HHW consciousness raising efforts. Resident awareness of HHW should be increased as part of a more pro-active public education program stressing:

- HHW avoidance through the use of safer alternatives;
- proper use or re-use of products with hazardous constituents; and
- HHW collection only when use or re-use is not feasible.

Increasing public awareness may also encourage more community groups to get involved in solving the HHW problem. The Conservation Foundation of DuPage County, for example, sponsors a stormwater drain stenciling program. This program discourages residents from pouring HHW into stormwater drains via stenciled messages on the pavement in front of the storm drains (messages such as "Dump no waste, drains to stream"). Community-based consciousness raising initiatives like the Conservation Foundation's stormwater stenciling program are one of the most effective educational methods available. By publicizing the HHW issue, the County may be able to encourage more groups like the Conservation Foundation become involved.

**4.5.2(b) Promote HHW avoidance and use of safer alternatives. (NEW, Plan-1996)**

The most cost effective means of managing HHW is an aggressive public education campaign that prevents or minimizes HHW generation. The County's efforts enabling citizens to recognize HHW should be paired with information about safer alternatives and HHW minimization.

A multi-media educational campaign should be developed to encourage residents to seek out consumer products without hazardous ingredients. Safer alternatives may include historically benign products like baking soda or new products specifically manufactured to be environmentally friendly. In cases where safer alternatives are not available, residents should be encouraged to buy only as much of a potentially hazardous product as they can use. The County's education campaign should include the development of stand-alone materials that specifically address identification and use of safer alternatives. HHW avoidance and safer alternatives information should appeal to a broad audience, but must target the individuals who make purchasing decisions regarding potentially hazardous items. In addition to using standard means of distributing public education materials, this particular information should be distributed to participants at all HHW collection events to help them to avoid becoming "repeat customers."

**4.5.2(c) Promote proper use or re-use of products with hazardous materials/ingredients. (NEW, Plan-1996)**

Information regarding HHW avoidance and safer alternatives will not address the problem of potentially hazardous materials that residents already possess. The second approach of the County's HHW education campaign should encourage residents to use up the hazardous product they have in accordance with label directions. The County's educational campaign should provide innovative ideas about how residents can use up products or find other parties (relatives, neighbors, local charities) having a need for such items. The development of a listing of re-use or waste swapping opportunities is consistent with the State's solid waste hierarchy and will ease the burden upon HHW collection facilities (see Section 4.5.3 below for a full discussion of a proposed County Re-Use Program).

Other products with hazardous characteristics may have no useful life left. If there is no potential for re-use of a product, residents must be encouraged to explore whether there is an existing recovery system to divert the item from the waste stream. In some cases, businesses have established the infrastructure to collect and safely manage used products at little or no cost to customers. Examples of potentially hazardous products that can be managed by private sector diversion systems include automobile batteries and used motor oil. The County's education program should promote resident awareness of existing diversion opportunities as a means of reducing the amount of HHW destined for HHW collection sites. Listings of recycling opportunities for items otherwise managed as HHW will be included in the County's *Waste Reduction Directory* (formerly the *Recycling Yellow Pages*).

Educational materials regarding using up hazardous products or seeking re-use opportunities should appeal to a broad audience, but must target the individuals who make disposal decisions regarding potentially hazardous items. In addition to using standard means of distributing public education materials, this particular information should be distributed to participants at all HHW collection events to help them to avoid becoming "repeat customers."

**4.5.2(d) Inform residents about the availability of HHW collection as the option of last resort. (NEW, Plan-1996)**

If, and only if, there is no possibility of using up or directing potentially hazardous materials to a private sector diversion system, the focus of the County's education program should be delivery of HHW to an appropriate HHW collection facility or event. Generally, publicity regarding HHW drop-off opportunities will include information about what items are acceptable and unacceptable, the location of permanent facilities or regularly scheduled events, as well as the dates and times when materials will be accepted. Unique public education materials will be developed to address the particulars of each HHW collection facility or event. For example, a specialized publicity campaign has been necessary to control the use of the City of Naperville's HHW collection facility pursuant to the recently approved intergovernmental agreement. Development of specific educational materials for the County's mobile collection program and one-day IEPA collection events will be coordinated with the respective host community.

Educational materials regarding HHW collection opportunities should appeal to a broad audience, but must target the individuals who make disposal decisions regarding potentially hazardous items. Based upon the IEPA's experience with one-day events, newspaper press releases and custom flyers appear to be the most effective means of informing the public about upcoming HHW collection opportunities. Brochures and/or flyers regarding HHW collection options should include an explanation of how the HHW is ultimately disposed of and the related costs. One central theme of such materials will be the importance of avoiding HHW in the future. By stressing the relatively high cost of managing material as HHW, the availability of safer alternatives, and effective HHW reduction

techniques, these educational materials will encourage residents to make their first visit to a HHW collection facility their last visit.

#### **4.5.3 HHW Diversion and Re-Use Program**

##### **4.5.3(a) The County should develop a paint re-use program. (NEW, Plan-1996)**

With paint averaging more than 40% of the HHW waste disposed of through costly HHW collections, the desirability of diverting this reusable product from the HHW waste stream is obvious.

The County should research existing paint reuse programs such as paint dealer programs and paint exchange events to assess the feasibility of assisting the private sector in setting up a program in the County. If feasible, the County should develop this program.

##### **4.5.3(b) Foster the development of private sector efforts to re-use, recycle, or otherwise divert HHW from the municipal waste stream. (NEW, Plan-1996)**

HHW collection efforts sponsored by the IEPA now reject automobile batteries because businesses that sell such batteries are required by state law to accept them for recycling. Even without a state mandate, a substantial number of local firms now accept used motor oil from residents. DuPage County should promote voluntary private sector initiatives to collect materials otherwise managed as HHW for re-use or recycling. The *Waste Reduction Directory (formerly the Recycling Yellow Pages)* should continue listing such firms and the materials they accept. The County should work in cooperation with other public agencies and private sector entities interested in diverting other potentially hazardous materials away from the waste stream and HHW collection events. Proper management of such materials by local business should be much more cost-effective than handling the same materials as HHW. The County should identify and, if feasible, eliminate the barriers to the development of similar diversion systems for other hard-to-handle materials such as waste paints.

##### **4.5.3(c) The County's mobile HHW collection program should include a re-use component. (NEW, Plan-1996)**

Despite educational efforts encouraging residents to use up potentially hazardous products, the experience of similar programs indicates that usable products will still be delivered to HHW collection events. The County's mobile HHW program should include a re-use component to capture and divert certain re-usable products brought to collection events. The re-use program should provide for a waste exchange table at mobile collection events where residents can pick-up re-usable items that would have otherwise been handled as HHW. In addition to diverting re-usables out of the HHW stream, the waste exchange table will serve an important educational function by reminding collection event participants to consider re-use as viable HHW management option in the future.

Depending upon the quantities and types of re-usable materials received at the mobile HHW collection events, the County should establish arrangements with private sector and not-for-profit outlets for larger quantities of re-usable materials. Private firms may be able to utilize certain potentially hazardous materials "as is" or as a manufacturing feed stock. Not-for-profit groups may distribute re-usable cleaning products through food banks or other charitable organizations. The success of the re-use element of the County's Mobile HHW Collection Program will depend upon identification of consistently re-usable products, development of reliable outlets for diverted items, and a cooperative relationship with the contractor conducting the collections. If diversion of larger quantities of re-usable products is to be feasible, the County may need to provide assistance to the outlets in the form of storage containers, transportation, or funding.

The diversion of re-usable products should be viewed as preferable to the management of materials as HHW. In most cases, using a potentially hazardous product will be less expensive than treating or disposing of it as part of the HHW stream. The County should consider the preference for re-use over disposal expressed in the State of Illinois' solid waste hierarchy in cases where re-use may entail marginal savings or slight expense. Economics aside, stressing the re-use of products with hazardous ingredients is consistent with the public education component of the County's overall HHW program. By stressing the importance of re-use during mobile HHW collection events, the County's "use it up or find someone who can" message will be more effective.

#### **4.5.4 HHW Collection Programs**

##### **4.5.4(a) HHW collection should be considered the option of last resort. (NEW, Plan-1996)**

While diversion of potentially hazardous materials from the municipal waste stream protects human health and the environment, HHW collection is expensive and also involves risks. More importantly, a substantial amount of the materials from HHW collection events are destined for disposal, the least preferable waste management option. In order to minimize costs and maximize conformity with the waste management hierarchy, the County should promote HHW collection only as the option of last resort.

Unlike recycling, an effective HHW collection program strives for decreasing participation rates. Because diversion opportunities for hazardous residential waste materials have been rather limited, the County should anticipate the purging of stockpiles of HHW built-up in basements and garages over the years. Once the initial backlog of stored HHW is exhausted however, the County's message of HHW avoidance, reduction, or re-use should enable residents to minimize their reliance of HHW collection. The County's ability to scale back or eliminate the need for HHW collection in the future will depend in large part upon the effectiveness of the HHW education program. By fully funding an aggressive education program, the County will realize a long-term cost savings associated with lower demand for HHW collection.

The balance of this section discusses making HHW collection opportunities more convenient for residents in hopes of maximizing participation. Although this short-term objective is important, the County's ultimate goal must be discouraging resident reliance upon HHW collection events. This message is central to the education program and participants at collection events will receive materials explaining how they can avoid being "repeat customers." Unfortunately, providing convenient HHW collection service on a routine basis free of charge may contradict the notion that avoiding or using up hazardous products is the preferred solution to the HHW problem. The County should investigate additional means of discouraging on-going reliance on HHW collection. The County should not rule out collecting a nominal service charge from residents who participate at County-sponsored HHW collection events. A modest fee would not reduce participation significantly and should reduce the potential for abuse associated with a "free" on-going HHW collection program.

**4.5.4(b) Maximize the number of IEPA one-day HHW collection events held within DuPage County. (NEW, Plan-1996)**

Since 1990, the only on-going HHW collection program has been the IEPA's one-day collection event program. The IEPA's one-day collection program involves the establishment of a temporary HHW collection site at a location provided by a host community. One-day events are typically held at municipal public works yards, county fairgrounds, high school parking lots, or other public-owned sites. Host communities provide publicity, traffic control, and volunteer staff to assist during the collection event. The IEPA provides a private firm licensed to handle hazardous waste to accept, categorize, package, transport, and dispose of the HHW brought to the collection event. The cost of actually collecting and managing the HHW is paid for by the IEPA.

The Solid Waste Department has worked to maximize the number of IEPA one-day HHW collection events held within DuPage County. The County's recent efforts have included hosting a one-day HHW collection event at the IPF in Fall 1994, coordinating and publicizing other in-county events, and encouraging municipalities to file host community applications with the IEPA. The following table summarizes information from the IEPA one-day events that have been held in DuPage County from 1990 through 1995.

TABLE 4-2

## AMOUNTS COLLECTED AT IEPA ONE-DAY EVENTS HELD IN DUPAGE COUNTY FROM 1990-1995

EVENT DATE	LOCATION	NUMBER OF PARTICIPANTS (households)
5/5/90	City of Naperville	1,192
9/14/91	City of Wheaton	1,400
5/2/92	City of Elmhurst	1,008
5/1/93	Village of Lombard	928
6/4/94	City of Bensenville	644
6/4/94	City of Wood Dale & City of Addison	1,159
10/8/94	Village of Downers Grove	2,846
10/15/94	Village of Itasca	411
10/29/94	Village of Carol Stream	1,678
9/16/95	City of Warrenville	878
10/14/95	Village of Lisle	1,472
TOTAL		13,616

The IEPA's one-day collection event program demonstrated that an HHW collection could be successful and that public demand for such events is high. Unfortunately, budgetary constraints and responsibility for providing similar service throughout the entire State of Illinois has limited the number of IEPA one-day events readily accessible to DuPage County residents. From 1990 through 1995 the IEPA held 11 events in the County, serving approximately 13,616 out of 308,320 eligible households. This represents an overall participation rate of roughly 4.4% in DuPage County.

The County should continue its effort to maximize the number of IEPA sponsored one-day HHW collection events held in DuPage County. This effort should include two specific and interrelated courses of action. Because the total number of one-day events conducted by the IEPA impacts the likelihood that one will be held in a DuPage County community, the County should first make an effort to maximize the state funding levels for the IEPA's collection program. Once available funding is maximized, the County should then encourage and provide assistance to any community in DuPage that intends to submit a host community application. This approach should increase the level of service provided to DuPage County residents by IEPA-sponsored HHW collection programs.

**4.5.4(c) Maintain an intergovernmental agreement with the city of Naperville to provide permanent HHW collection services for DuPage County residents in a cost-efficient manner. (NEW, Plan-1996)**

Recognizing some of the limitations of the one-day collection event approach, the IEPA and the City of Naperville established a permanent HHW collection facility in 1992. The Naperville site is one of only two permanent HHW collection facilities in Illinois. Pursuant to an intergovernmental agreement, Naperville developed, staffs, and provides supplies for the permanent facility located at Naperville Fire Station No. 4. The IEPA provides training for Naperville personnel and has contracted for a licensed hazardous waste hauler to remove the HHW from the facility. The facility was initially only available to Naperville residents.

In December 1995, DuPage County and the City of Naperville entered into a three-year agreement allowing residents from throughout DuPage County to utilize the permanent HHW collection facility. The County will provide \$225,000 over the term of the intergovernmental agreement to offset Naperville's operating costs. Use of the permanent facility by County residents is being implemented in a phased manner to reduce the likelihood of the facility being overwhelmed. The agreement with City of Naperville also requires the County to develop additional HHW collection capability within the first two years of the agreement to reduce the burden on the City's permanent facility. To this end, the County has taken steps to establish a mobile HHW collection program (see Section 4.5.4(d) below).

The intergovernmental agreement with the City of Naperville should be maintained in order to assure continued access to a permanent HHW collection facility for residents of all DuPage County. The on-going availability of HHW collection service addresses the needs of residents who cannot hold onto HHW until the next IEPA or DuPage County-sponsored collection event. The presence of the permanent facility is particularly valuable during the winter months, when residents are moving in the immediate future, or when the material in question poses an imminent health threat. A comparison between the level of service and cost-efficiency of Naperville's permanent facility and the County's mobile HHW collection program should be made on an on-going basis. If the mobile collection program can achieve a substantially higher level of service and cost-efficiency, the County should work in cooperation with the City of Naperville to re-evaluate the intergovernmental agreement.

**4.5.4(d) Establish a mobile HHW collection program. (NEW, Plan-1996)**

The agreement opening up the City of Naperville's permanent HHW collection facility to residents on a county-wide basis is only the first step in providing an adequate level of HHW collection service. Surveys performed during IEPA one-day collection events indicate that there are limits to how far participants are willing drive to drop-off HHW. Participation rates drop significantly if individuals must drive more than eight miles. Because the Naperville site is located in the southwest, a significant service gap remains in the eastern and northern portions of the County. Even if residents were willing to travel a greater distance to visit the Naperville permanent facility, the site simply does not possess adequate capacity to service

all of DuPage County. Despite the cautious, phased-in public awareness approach used to publicize the availability of the Naperville permanent collection facility, there are still legitimate concerns about the facility being overwhelmed. Consequently, it is critical that supplemental HHW collection capacity is developed to service DuPage County.

In 1995, the Solid Waste Committee examined the advantages and disadvantages of feasible HHW collection methods. The Committee considered permanent facilities, one-day events, and a mobile collection program. The mobile collection approach was selected because a series of two or three-day temporary collection events should provide a higher level of service than an additional permanent facility in one fixed location. The County's mobile program, unlike the IEPA's one-day events, will be held on a regular schedule at specified locations, and collection hours may span more than one day. The locations in areas not served by either the Naperville permanent facility or the IEPA one-day events will be targeted as mobile collection sites.

A request for proposals (RFP) for the provision of a mobile HHW collection program was issued in late 1995. At this time, the County is in the final stage of contract negotiations with one of the private firms that responded to the RFP. The terms of the draft contract provides for a one-year mobile collection program for a cost not to exceed \$400,000. The contract may be renewed for one additional year. Depending upon participation levels and disposal costs incurred, the County anticipates six to seven mobile collection events during the first year of the program.

The County should follow through with the establishment and implementation of a mobile HHW collection program. The mobile collection program will be the first program of its kind in Illinois. The County should capitalize upon the experimental nature of the program. Innovative approaches to HHW management such as holding collections on Sundays and diverting reusables away from the HHW stream should be strongly encouraged. The overall performance of the program should be closely monitored to determine its comparative effectiveness and cost-efficiency. Depending upon these results, the County may opt to expand the program in the future or consider other collection options. The County should aggressively pursue additional funding for the current program from outside sources including the IEPA.

## 4.6 WASTE-TO-ENERGY

### ***ACTION ITEMS DELETED FROM PLAN-1991***

#### **Action #40**

An intent to develop a project must be formally expressed.

#### **Action #41**

The availability of energy markets should be addressed in conjunction with the decision of intent to develop a project.

#### **Action #42**

A site (or sites) should be identified for the project.

### **4.6.1 Waste-To- Energy as a Disposal Option**

#### **4.6.1(a) The County should continue to monitor the technical and economic feasibility of waste- to-energy as a final disposal method. (NEW, Plan-1996)**

Since the adoption of Plan-1991, DuPage County has monitored the feasibility of waste-to -energy (WTE) as a final disposal option in light of regulatory conditions and regional tipping fees. Although WTE was not selected as the Phase 3 final disposal technology, the County should continue its on-going evaluation of WTE as a long-term disposal option. This will enable the County to fulfill its role as a solid waste management information clearinghouse. Accurate information about the status of WTE technology should be maintained and provided to municipalities and the general public upon request.

Information regarding WTE was received in response to the County's Request for Qualifications (RFQ) issued in May 1994. The companies that submitted information about WTE and were deemed qualified during the RFQ process were:

- 1) Energy Answers and Kirby-Coffman;
- 2) Foster-Wheeler Powers Systems and Reading Energy;
- 3) Ogden Martin; and
- 4) National Ecology.

Data from six reference facilities was evaluated. The tipping fees at the six reference facilities ranged from \$46 to \$94 per ton. The Solid Waste Committee has received

educational presentations from several interested vendors. The Committee has not expressed any further interest in pursuing WTE as a disposal option.

**4.6.1(b) The County should continue to monitor the availability of waste-to-energy facilities in the region. (NEW, Plan-1996)**

At this time, there is one existing and two proposed municipal solid waste WTE facilities in the northeastern Illinois region. Both proposed facilities are to be located in southern Cook County. Foster-Wheeler Power Systems and Reading Energy are working jointly on a WTE facility in Robbins, Illinois. Energy Answers and Kirby-Coffman are working jointly on a WTE facility in Summit-McCook, Illinois. The City of Chicago recently announced its plan to permanently close down the Northwest WTE Facility, the only mixed municipal refuse WTE facility in Illinois that is currently operational.

The Robbins Facility is scheduled to come on-line in December 1996 and will process up to 1,600 tons per day (TPD). The facility will have front-end processing capable of removing 400 TPD of recyclables from the incoming waste stream. The remaining 1,200 TPD of non-recyclable waste will be converted into electricity by the facility's WTE unit. The total cost of the project will exceed \$385 million. Waste is being committed to the facility by Cook County municipalities through the execution of project-use agreements. Foster-Wheeler Power Systems and Reading Energy have filed a lawsuit in federal court challenging the State of Illinois' repeal of the Retail Rate Law. A decision on the lawsuit is expected in late 1996.

Work on the WTE component of the Summit-McCook Facility has been postponed pending an appeal of the Illinois Environmental Protection Agency's (IEPA) denial of the facility's development permit application. Energy Answers and Kirby-Coffman began construction on the 2,150 TPD transfer station component of the facility in late 1995. The transfer station element of the site should be operational in late 1996. A decision on the permit appeal for the 1,750 TPD WTE unit is expected in July 1996. If the appeal results in the issuance of an IEPA development permit for the WTE component, the focus of Energy Answers and Kirby-Coffman will then shift to restoration of the incentives provided under the Retail Rate Law prior to commencement of construction.

In addition to the municipal refuse WTE projects discussed above, there is one wood waste incinerator project proposed in Cook County. Resource Recycling Systems is developing a cogeneration facility in McCook, Illinois, that would convert wood waste into electricity and steam. The McCook Facility would accept commercial wood waste, not municipal solid waste. This project is also "on hold" pending the resolution of challenges to the repeal of the Retail Rate Law.

Continuing to monitor the availability of waste-to-energy facilities in the region will provide municipalities and other waste generators with additional options for disposing of their waste materials.

#### 4.6.2 Waste-To- Energy Legislation

**4.6.2(a) The County should continue to monitor and, when appropriate, lobby the General Assembly and the U.S. Congress to shape legislation impacting waste-to-energy. (NEW, Plan-1996)**

The most significant development regarding WTE in Illinois since 1991 is the repeal of the Retail Rate law. For a full discussion of this matter, please see Section 3.2.1(p). The repeal of the Retail Rate law has removed a major incentive for the development of WTE projects in Illinois. The elimination of the Retail Rate subsidy may also jeopardize the viability of the WTE project currently under construction. Some WTE project developers and host communities have indicated that they will sue the State to retain the benefits of the Retail Rate arrangement. At this time, the outcome of such litigation is unclear.

The County should continue to monitor legislation pertaining to WTE considered on the state and national level. While the County is not pursuing nor encouraging the development of WTE capacity within DuPage County to serve the disposal needs of its residents, legislation in this field may impact the direct and indirect costs paid by residents and the County's long-term waste disposal options. By keeping a close eye on WTE legislation, the County can protect the overall interests of its citizens and maintain WTE as a potential waste management technology.

#### 4.7 LANDFILLING

##### **ACTION ITEMS DELETED FROM PLAN-1991**

**Action Item #43**

The availability of the two existing landfill sites must be ascertained.

**Action Item #44**

If so decided, an intent to develop the project must be formally expressed.

**Action Item #45**

A site (or sites) should be identified for the project.

**4.7.1 Any proposals for siting a landfill in DuPage County will be monitored and evaluated (NEW, Plan-1996)**

The County monitors permits and regulations pursuant to its delegation agreement with the IEPA. The County can also act as a siting authority, should someone attempt to site a landfill in the unincorporated portions of the County.

**STATUS**

The landfilling option in DuPage County was greatly limited when a consent decree ordered the two DuPage County landfills to close by December 31, 2000. The decree addressed the fact that the Forest Preserve District, who owns the landfills, does not have the authority to allow a landfill to operate on their property, as waste landfilling is not the preservation of flora and fauna. As a result, the landfill operators (BFI, Waste Management) decided to direct significantly more waste to the landfills. This action will close the landfills earlier than the ordered closure date.

To site a landfill in the State of Illinois, the owner/operator must follow the siting requirements in Section 39.2 of the Environmental Protection Act. This includes approval by the applicable local authority. Development and operating permits must be granted by the IEPA as well as any applicable supplemental permits when needed.

In 1994, Solid Waste Department staff worked with County Development geographic information system personnel to create a map which identified potential search areas for siting solid waste management facilities. The computer-generated map graphically displayed by a process of elimination those areas available in the County after applying the 1,000-foot setback from properties zoned for primarily residential use, the 10,000-foot setback from airports, and Forest Preserve District properties consistent with the 1992 landfill consent decree. A copy of the siting map is available upon request by calling the DuPage County Solid Waste Department at (630) 682-7373. Numerous copies of the map have been requested and forwarded to local and regional waste hauling firms.

Due to the fact that no new landfills are being sited presently, it appears that for the haulers to economically dispose of waste generated in DuPage County, the use of transfer stations is expected. Haulers have indicated that landfilling will first occur in the landfills closest to DuPage County. Those landfills may include Wheatland Prairie (anticipate reopening in 1996), CDT (pending expansion approval) and the Joliet Arsenal landfill in Will County (pending siting approval), Settlers Hill and Woodland Landfills in Kane County, Countryside (pending expansion approval) and BFI #1 in Lake County, Tazewell County Landfill, Orchard Hills Landfill in Ogle County, and Waste Management's Landfill in LaPorte County, Indiana.

Monitoring of the two DuPage County landfills is performed by the operators, DuPage County Forest Preserve District, Illinois Environmental Protection Agency (IEPA), and the Solid Waste Department. The Solid Waste Department inspects the landfills regularly according to the DuPage County's delegation agreement with the IEPA. Groundwater, leachate, and gas are monitored regularly at each facility. The results are submitted to the IEPA. If a detection above acceptable levels is made, the operator notifies the Forest Preserve, IEPA, and the Solid Waste Department. If there is a determination of potential to harm human health or the environment, the site must submit a corrective action plan to address the problem.

**RECOMMENDATIONS**

The County should continue to monitor any open or closed landfill sites pursuant to its delegation agreement with the IEPA. Any permit applications will be reviewed and commented on as appropriate. Siting of landfills will be the responsibility of the local authority. If someone is seeking to site a facility within the incorporated portion of DuPage County, the County Board would be the siting authority. The County Board would review the site pursuant to the criteria in Section 39.2 of the Illinois Environmental Protection Act.

**4.7.2 The County shall continue to provide educational information on landfilling as it becomes available. (NEW, Plan-1996)**

**STATUS**

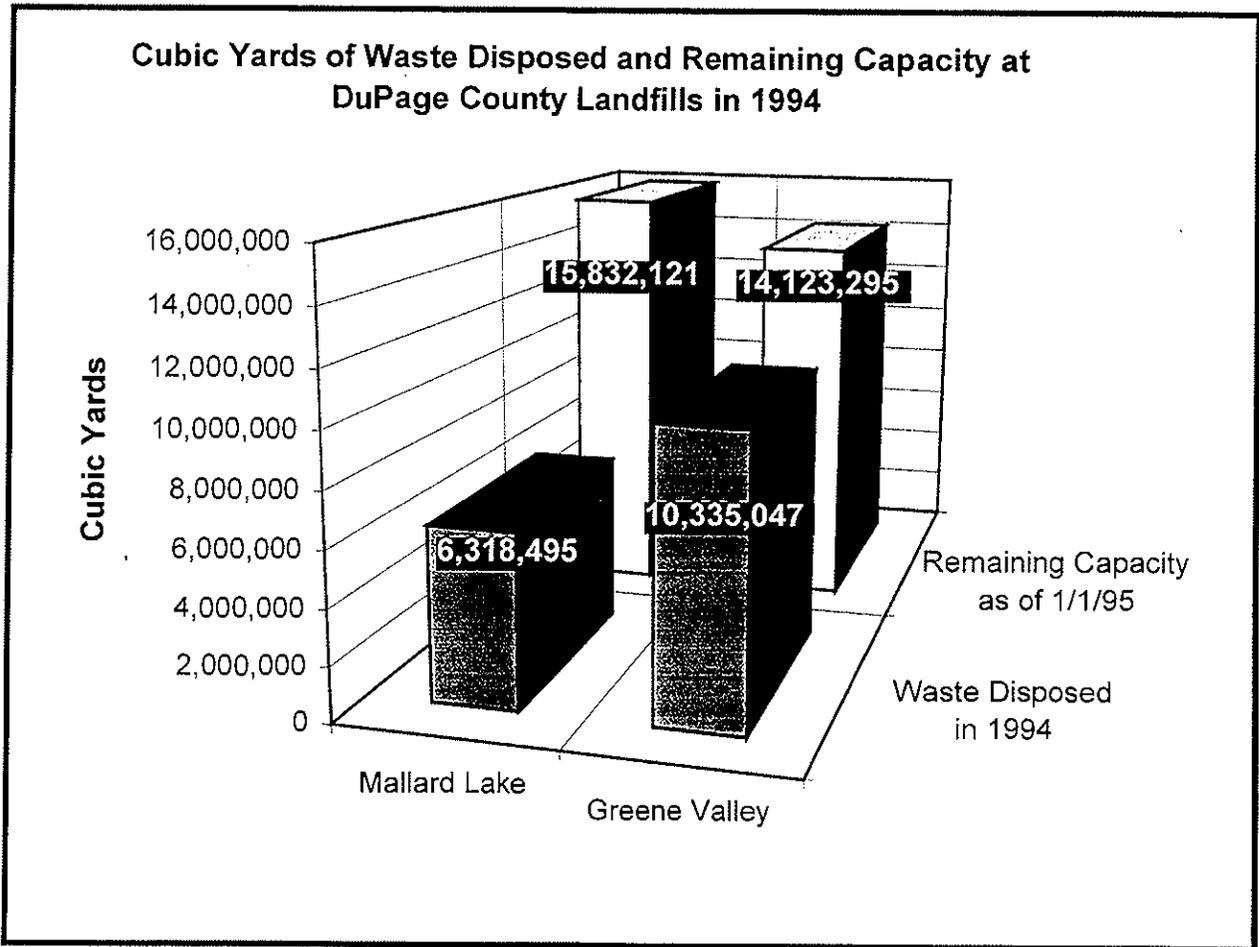
The Solid Waste Committee has provided information regarding landfilling to the public in meetings through various educational presentations from firms that are involved in the landfilling of waste. As needed, the County will continue to use the Solid Waste Education Center or public forums to inform the public regarding the landfilling of waste.

Information that is regularly communicated to the public concerns current landfill disposal capacity and rate information. The following provides a status as of Plan-1996:

A. Disposal Capacity

According to the two DuPage County landfill operators, the amount of remaining disposal capacity (in cubic yards) as of January 1, 1995 for the two DuPage County landfills is depicted in chart 4-1. (see Chart 4-1, pg. 102).

CHART 4-1



Source: DuPage County 1994 Waste To Date Annual Report

The landfill operator at Greene Valley (Waste Management) has indicated that the site will reach capacity by the fall of 1996. The operator at Mallard Lake (BFI, E & E Hauling) has indicated the site will reach capacity sometime during 1998.

According to Plan-1991, disposal of waste in DuPage landfills from generators outside the County was to be kept to a minimum. In some cases only certain DuPage communities were disposing of their waste in DuPage landfills. The aforementioned consent decree (see Section 4.7.1) dramatically increased the flow of waste into DuPage landfills from generators outside the County. Average daily waste deliveries increased from under 10,000 cubic yards a day to over 30,000 cubic yards a day at the Greene Valley Landfill (beginning in December of 1992). Mallard Lake Landfill's average daily intake increased from approximately 10,000 cubic yards a day to over 20,000 cubic yards a day by 1993.

The large influx of waste occurred because the nation's two largest hauling companies (Waste Management and BFI) operate the DuPage landfills and have the ability to direct

their vehicles to tip their loads at the landfills they operate. This large influx of waste has dramatically changed the long-term disposal option of landfilling in DuPage County. Landfilling in DuPage County is not an anticipated solid waste disposal method once the two active landfills close. However, it is an anticipated disposal method to be used outside the County in cooperation with transfer stations.

According to the "Available Disposal Capacity for Solid Waste in Illinois" 1995 report by the IEPA, the amount of available capacity for the region's (northeastern Illinois) sixteen landfills was 128,251,422 cubic yards. This total includes the SWANCC balefill in Cook County which is 37,900,000 cubic yards. The SWANCC balefill, however, still has not been approved by the Army Corps of Engineers. Also, the report states that if current disposal rates continue, and no additional capacity is added to the region's landfills, the region's capacity will be almost exhausted around the year 2000 (see Map 4-A, pg. 104).

Once the region's landfills have reached capacity, the next likely landfill that could be extensively used for solid waste disposal is the Spoon Ridge (Gallatin) Landfill located in Fulton County which is in region 3 (see Map 4-B, pg. 105). The landfill's operator (BFI) is anticipating this region's waste, and has a rail line with a spur to the landfill already in place.

**B. Disposal Rates**

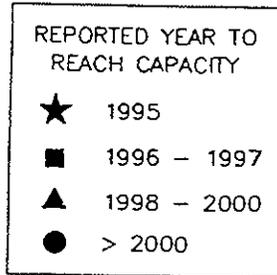
Surveys were conducted from the region's landfill operators in 1994 and 1995, to gain an understanding of the trends in disposal rates. The surveys indicated that in each of the past two years, the rates at the areas landfills have increased by 10%. A major hauler recently indicated that they anticipate rates rising by at least another 25% by the end of 1996. Disposal rates are key to the methods employed in handling the waste stream. Locating transfer stations or other solid waste facilities will be determined by the disposal rates at landfills.

***RECOMMENDATIONS***

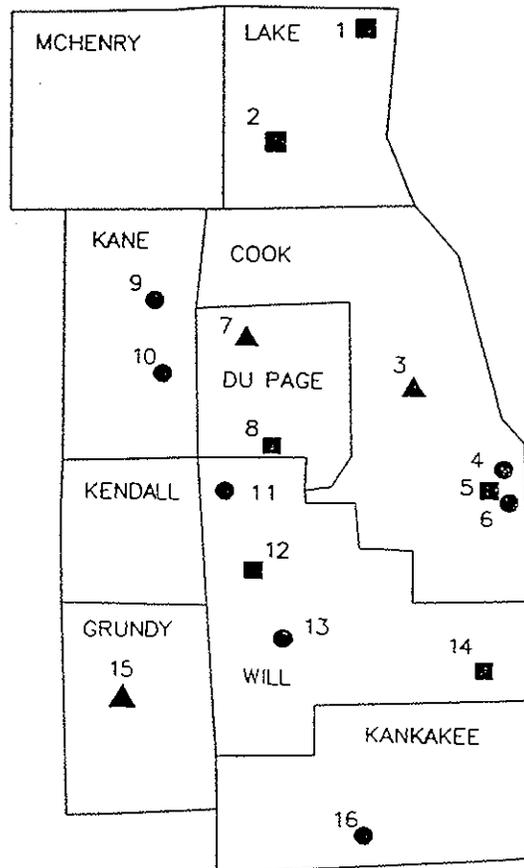
The County should continue to provide information regarding landfilling as it relates to local businesses and residents. Informing the public about disposal capacity and rates can assist various entities and individuals that manage waste hauling contracts. If those entities are informed, they can incorporate such information into projected disposal costs for future waste hauling agreements. This information can also assist businesses in forecasting various disposal costs into their cost of doing business and can help them formulate plans to reduce their waste stream.

MAP 4-A

REGION 2 - 1994 ACTIVE NON-HAZARDOUS SOLID WASTE LANDFILLS



1. BFI #1
2. Countryside Landfill
3. Sexton #2
4. Land & Lakes #3
5. Land & Lakes / Dolton
6. CID #1 and CID RDF #2
7. Mollard Lake
8. Greene Valley Landfill
9. Woodland Landfill
10. Settler's Hill
11. Wheatland Prairie Landfill
12. CDT Landfill
13. Loraway RDF (ESL, Inc.)
14. Beecher Development Co.
15. Environtech, Inc.
16. Konkokee County RDF



Source: "Available Disposal Capacity for Solid Waste in Illinois - Eighth Annual Report."  
 Prepared by Illinois Environmental Protection Agency, September 1995.

#### 4.8 SLUDGE MANAGEMENT

**ACTION ITEMS DELETED FROM PLAN-1991**

**Action #26**

The Forest Preserve District Should take steps to prohibit the landfilling of sludge in the County by 1997.

**4.8.1 The County will continue efforts to find alternative uses for sludge. (NEW, Plan-1996)**

**RECOMMENDATIONS**

The 1990 Solid Waste Plan recommends limiting the landfilling of sludge. The DuPage County Department of Environmental Concerns, through one of their wastewater treatment plants, has constructed a facility which will maximize the use of sludge by converting the gas from the sludge into a fuel to operate the treatment plant and County vehicles. The technology could save the County thousands of dollars each year in fuel costs plus assist the County in reducing emissions by over 90%.

The Solid Waste Department plans on retrofitting one of its vehicles to natural gas in 1997 to provide a basis for expanding to other County vehicles. A grant is available from the State of Illinois to recover 80% of the costs to retrofit each vehicle. The Solid Waste Department and possibly other Departments within the County are expected to apply for the grant funding.

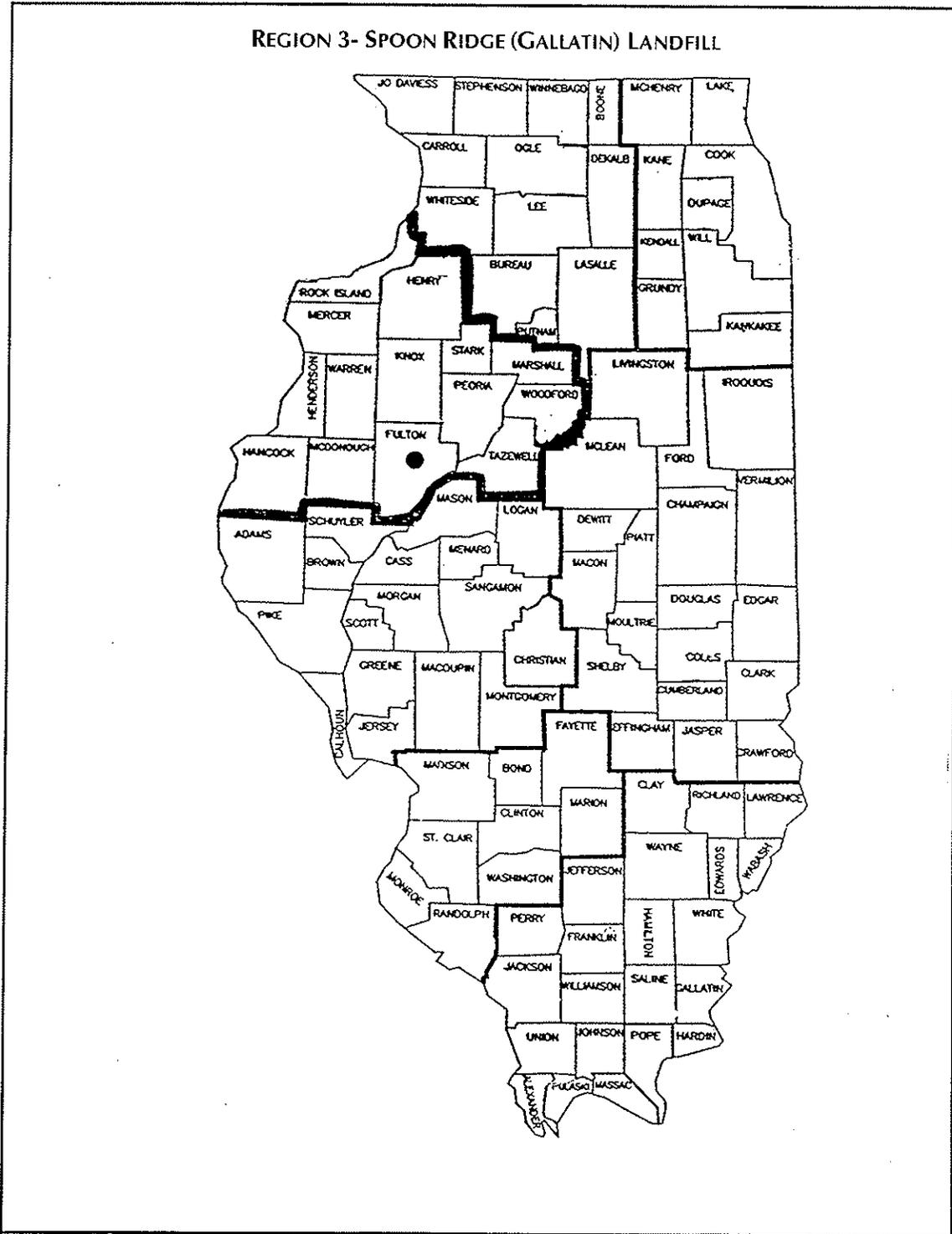
#### 4.9 WASTE HAULING AND TRANSFER STATIONS

**ACTION ITEMS DELETED FROM PLAN-1991**

**Action #36**

The availability of in-county disposal capability should be determined. If in-county disposal will be available for an extended period of time, the provisions of transfer capability may be unnecessary. However, even if in-county disposal capability will be available for an extended period of time, the practicality and desirability of providing transfer capability in the county should be evaluated as a mechanism to improve waste transport efficiencies and to minimize local traffic impacts.

MAP 4-B



Source: "Available Disposal Capacity for Solid Waste in Illinois - Eighth Annual Report."  
Prepared by Illinois Environmental Protection Agency, September 1995.

**4.9.1 The County should encourage development of three to five waste transfer facilities throughout the County. The County should assist the private sector in determining the most appropriate and efficient locations for transfer facilities, and providing education and appropriate tours to municipalities, townships or any other people interested in knowing more about waste transfer stations. (NEW, Plan-1996)**

**STATUS**

There presently are no permitted waste transfer stations located within the boundaries of the DuPage County, however, permit and siting issues are pending with reference to certain non-permitted waste transfer facilities within the County. The statutory setback requirement of 1,000 feet and local siting approval are among the issues being addressed. One such facility is located within incorporated Westmont, Illinois. The outcome of these pending issues will impact the amount of waste transfer operations within DuPage County.

Section 22.14 of the Illinois Environmental Protection Act (415 ILCS 5/22.15, 1992) requires that a waste transfer facility may not be situated less than 1,000 feet from the nearest property zoned for primarily residential uses or within 1,000 feet of any dwelling in counties of less than 3,000,000 inhabitants.

As waste transfer facilities must be set 1,000 feet from the nearest property zoned primarily for residential uses the question of point of measurement has been raised. In a 1992 case before the Illinois Pollution Control Board ("Board"), City of Des Plaines v. Solid Waste Agency of Northern Cook County, PCB 92-127, the Board determined that setback from the nearest property zoned for primarily residential uses is to be measured from the permitted facility and not from the property boundaries. In this particular case the permitted transfer station was to be constructed on approximately seven acres, however, the entire buffer area totaled 43 acres. The Board stated that as it was the owner's intent to use the seven acres permitted by the Illinois Environmental Protection Agency to develop a waste transfer station, and it had been demonstrated that they did not intend to use the entire 43-acre site for waste transfer operations, the facility itself was within the statutory setback limits. This Board finding encourages incorporating buffer zones in waste transfer station development.

The ability to site waste transfer stations within the borders of DuPage County is limited due to site availability and the defined setback requirement. A transfer station of sufficient size to meet the County's needs can be expected to occupy anywhere from 5 to 20 acres, depending on the facility's specific development plan and mode of transport. A proposal previously brought before the DuPage County Solid Waste Committee considered amending legislation to remove waste transfer stations from the local siting approval process and restructuring the setback requirement to correlate the setback distances to the amount of wastes received at the facility; for example, a facility operating at 500 or more tons per day may not be located less than 1,000 feet from the nearest property zoned for primarily residential uses; from 250 to less than 500 tons per day, not less than 750 feet;

from 100 to 250 tons per day, not less than 500 feet; and less than 100 tons per day, not less than 300 feet. To date this proposal has not received further action.

As of August 21, 1995, there were approximately 20 permit applications pending with the Illinois Environmental Protection Agency for storage, transfer, processing, and recycling facilities within the State of Illinois.

Those facilities situated more proximate to DuPage County may play an important role in the management of solid waste generated within DuPage County. Existing or proposed waste transfer facilities situated proximate to DuPage County include:

- 1) Speedway Disposal Transfer Station, Geneva, IL, Kane County existing/operating at approximately 200 tons per day
- 2) Browning Ferris Industries, Melrose Park, Cook County proposed/approximately 3,000 tons per day
- 3) XL Disposal, Crestwood, IL, Will County existing/operating at approximately 800 tons per day

A recent amendment to the Illinois Environmental Protection Act, ("Act") enacted July 7, 1995, under Public Act 89-122, more clearly defines the terms "storage site" and "transfer station." Under Section 3.83 of the Act "transfer station" is defined as 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 a rail carrier to a motor vehicle or water carrier; a water carrier to a rail carrier or motor vehicle; a motor vehicle to a rail carrier, water carrier, or motor vehicle; a rail carrier to a rail carrier, if the waste is removed from a rail car; or a water carrier to a water carrier, if the waste is removed from a vessel. The amendment provides that a "transfer station" does not include a site where waste is not removed from the transfer container, a site that accepts or receives open top units containing only clean construction and demolition debris, or a site that stores waste on a refuse motor vehicle for no more than 24 hours, excluding weekends and holidays.

In addition, "storage site" includes transfer stations but does not include a site that accepts or receives waste in transfer containers unless the waste is removed from the transfer container or unless the transfer container becomes stationary, en route to a disposal, treatment, or storage facility for more than five business days; or a site that accepts or receives open top units containing only clean construction and demolition debris; or a site that stores waste on a refuse motor vehicle or in the vehicle's detachable refuse receptacle for no more than 24 hours, excluding Saturdays, Sundays, and holidays, but only if the detachable refuse receptacle is completely covered or enclosed and is stored on the same site as the refuse motor vehicle that transported the receptacle to the site.

Lastly defined under this amendment is the term "transfer container" which means a reusable transportable shipping container that is completely covered or enclosed, that has a volume of not less than 250 cubic feet based on the external dimensions, and that is constructed and maintained to protect the container contents from water, rain, and wind, to prevent the free movement of rodents and vectors into or out of the container and to prevent leaking from the container.

Currently, the most common method of waste transfer transport is truck transfer; however, rail transfer is becoming a viable transport method. This recent amendment will support the rail waste transfer operations by allowing storage in intermodal containers for up to a five-day period.

In conclusion, although no permitted waste transfer operations currently exist in DuPage County, the County recognizes the development of waste transfer facilities as an integral part of the total solid waste management program. Furthermore, the County advocates multi-regional solid waste planning, including the development of multi-regional waste transfer stations, as encouraged by the Illinois General Assembly in the Solid Waste Planning and Recycling Act, (415 ILCS 15/2 (5), 1992).

#### ***RECOMMENDATIONS***

The County, through the Solid Waste Department, should assist the private sector in performing siting analyses for waste transfer stations.

Due to the decrease in the number of landfills and the increase of haul distances, transfer stations will become an even greater integral part in the management of solid waste for DuPage County. The location of transfer stations at selected sites throughout the County will serve the management of solid waste generated within the County and may further assist in keeping down costs associated with long-distance hauling of the waste. Industry standards for a packer truck haul distance to a disposal facility is approximately 15 miles. As the Greene Valley Landfill and the Mallard Lake Landfill must close no later than December 31, 2000, and it does not appear that further attempts will be made to site a final disposal facility within the DuPage County, waste transfer becomes one of the few options left available to the County for the management of solid waste.

The DuPage County Development Department prepared a Solid Waste Management Facility Search Area Map in August 1995, which identifies the limited number of locations at which a waste disposal or transfer facility could be sited within the DuPage County, while remaining within the 1,000 foot setback requirements from residentially zoned areas.

Waste transfer facilities are currently being proposed at locations outside of DuPage County, however, proximate to the County's borders. If these facilities are sited and constructed, there may not be a need to site waste transfer facilities within the County.

**4.9.2 The County should encourage development of recycling operations and landscape waste operations throughout the county. The County should assist the private sector in siting such operations. One means by which this may be accomplished is to amend legislation to provide for an expanded definition of construction and demolition debris. (NEW, Plan-1996)**

**STATUS**

Landscape waste transfer operations may occur without local siting approval if the landscape waste is transferred off site within a twenty-four hour period. Public Act 88-557 signed into law on July 27, 1994, amended the SB172 local siting approval procedure for regional pollution control facilities to exempt certain waste transfer stations from the requirement of local siting approval before obtaining a permit from the Illinois Environmental Protection Agency. Now excluded from the siting approval requirement are those waste transfer stations that exclusively handle landscape waste such as leaves, grass, and twigs. In order to address potential odor problems, the amendment provides that no single load of landscape waste may be kept at such a facility for longer than 24 hours.

Landscape waste transfer facilities which store landscape waste for more than a 24-hour period are still subject to the more rigorous local siting approval process under Section 39.2 of the Illinois Environmental Protection Act. A permit application for this type of facility is pending before the IEPA to be located on Yorkshire Drive, North of Route 19 in Streamwood, Illinois.

The local siting approval process and statutory setback requirements set forth in the Environmental Protection Act do not apply to recycling facilities and landscape waste transfer facilities. Several such facilities are either in existence in DuPage County, or permits for such facilities are pending with the Illinois Environmental Protection Agency. The following are facilities handling either recyclables or construction/demolition debris located within DuPage County:

- |                           |  |
|---------------------------|--|
| 1) Burke's Hauling        | 21 W. 626 North Avenue, Lombard, IL    |
| 2) Zimmerman              | 525 N. Powis Road, West Chicago, IL    |
| 3) DuPage County IPF      | 550 Center Avenue, Carol Stream, IL    |
| 4) Molenhouse Enterprises | 295 St. Charles Road, Carol Stream, IL |
| 5) Service, Inc.          | 47 West Irving Park, Roselle, IL       |
| 6) BFI Glen Ellyn         | 1 N. 282 Park Avenue, Glen Ellyn, IL   |
| 7) St. Charles Scrap      | 3 N. 780 Powis Road, West Chicago, IL  |

**RECOMMENDATIONS**

Legislation has been introduced which will expand the definition of construction and demolition debris to include material that is not readily marketable, for example drywall. This legislation will encourage the development of construction and demolition debris

recycling operations. The County should continue to work with the private sector to develop legislation which will assist in the development and expansion of recycling operations.

## **4.10 EMERGING TECHNOLOGIES**

### **4.10.1 Landfill Technologies**

#### **4.10.1(a) Gas-to-Energy Plants**

The 1990 Solid Waste Plan did not address various other technologies that apply to landfills. Those include the gas to energy concept, which the two active DuPage landfills are currently planning to use. Landfill gas has been used throughout the world to assist communities in reducing their energy costs. The gas can also be a major revenue producer for the landfill's operator or owner. The Mallard Lake Landfill is anticipated to produce large amounts of landfill gas as the facility has accepted significant quantities of "wet" wastes, such as sludges. The Mallard Lake Landfill is also expected to develop a landfill gas-to-energy facility as directed by the owner and operator. The Greene Valley anticipates operating its gas-to-energy facility in 1996. The County's environmental enforcement inspectors will make periodic inspections of the landfills even after the landfills are closed and no longer accepting waste for disposal purposes. The understanding is the operators of the Mallard Lake and Greene Valley Landfills expect to sell the energy they produce as electricity to Commonwealth Edison or a local entity.

The basic way a gas-to-energy plant operates is the methane is collected from the landfill through an extensive gas extraction system where it is then sent to turbines which convert the gas into electricity. The power generated is then sent to a utility power substation where transformation to utility voltage occurs. Once there, the power is further regulated by a series of voltage, current and power factor controllers to ensure compatibility with utility requirements for safety and power quality.

#### **Emissions from Gas-to-Energy Plants**

The landfill gas received for combustion will be initially passed through a dry filtering system to remove any filterable impurities. Emissions from the process must meet all applicable USEPA/IEPA air standards. Any condensate that is generated is directed to a storage tank and managed in accordance with applicable IEPA regulations.

#### **4.10.1(b) Landfill Mining**

This technology is used in areas where space for landfilling is limited, and where the markets of recovered recyclables is relatively high. Thus, the added landfill space plus the revenue from the sale of the recovered recyclables makes the project worthwhile. This is not an anticipated activity at the DuPage County landfills in the near future, as

other landfill space is anticipated to be used, and the opposition from the public would be too great.

Landfill reclamation, or landfill mining, is the excavation and mechanical processing of previously landfilled material to recover materials or landfill airspace, reduce the size of the landfill, or transfer material from an unlined to a lined landfill. Typically the landfill uses a front end loader to excavate the material, a separator separates the oversized non-processible material, which is followed by use of a trommel for separating the soil fraction. The soils may then be used as a cover material again. An excavator may be used to feed the materials, and the oversized fraction from the trommel passes by the magnetic separator to capture ferrous materials, which is sent to an air knife for further separations.

The recyclable items removed from a landfill, though a revenue generator, have not been proven to be as valuable as source separated materials. An economic benefit from landfill mining is in avoiding the capping requirements and staying open. A drawback, however, could be if a hazardous waste is found, because then the costs of testing and transporting the material become great. Other drawbacks could be the harsh odor caused by such activity, as well as worker exposure and safety.

#### **4.11 ENFORCEMENT/INSPECTIONS**

##### ***STATUS***

The Solid Waste Department (Solid Waste Division prior to 1993), has maintained a delegation agreement with the Illinois Environmental Protection Agency (IEPA) since 1986. The current agreement will expire on June 30, 1998. The agreement grants the County authority to inspect non-hazardous solid waste sites and enforce applicable portions of the Illinois Environmental Protection Act and Illinois Pollution Control Board Regulations. This also includes monitoring and commenting on permits submitted to the IEPA. The delegation agreement has proved to be an extremely successful program because the County can react to complaints more expeditiously than the State and can utilize the State's Attorney's Office to litigate any situations that require legal action.

The Solid Waste Department currently inspects both active DuPage County solid waste landfills regularly and closed and regulated landfills once or twice a year. Open dumps and unpermitted transfer stations are also inspected regularly. The Department inspected the Naperville Household Hazardous Waste Facility regularly until an agreement was made in 1995 between the City of Naperville and the County to fund the site. See the table below for inspections performed in the years 1991 - 1994.

YEAR	INSPECTIONS PERFORMED	INSTANCES OF NON-COMPLIANCE
1991	129	7
1992	153	11
1993	186	62
1994	182	60
1995	160	104

As noted in Table 4-3, the Solid Waste Department currently performs over 150 inspections per year pursuant to the delegation agreement. This is approximately 25% more than what was performed prior to 1992. This increase is attributed to both DuPage landfills dramatically increasing the rate of incoming waste since December 1992. New laws at the landfills, and banning various wastes (see legislative change section 2.3) have also caused additional illegal dumping, resulting in the Department performing additional inspections. The higher number of inspections have also resulted in dramatic increases in the enforcement caseload. It is anticipated that this level of inspections will be maintained until both the landfills have closed.

To conduct inspections pursuant to the delegation agreement, inspectors must be certified by the IEPA. This requires a training program with the State and/or County. The Department currently maintains three certified inspectors and utilizes outside contractors for some inspection work. Utilizing outside contractors (a form of "privatizing") has proven to be a cost effective way to assist the Department in achieving program goals.

The Department regularly assists the private sector by providing information related to open dumping and open/closed landfills that have occurred in the County. The information is needed to complete an environmental analysis prior to the purchase of a property. The program has also provided a mechanism for educating the public on various environmental laws, informing businesses/residents of the do's and don'ts of solid waste disposal, and assistance on better disposal alternatives.

**4.11.1 The County will continue with and adapt the enforcement program as the two DuPage landfills close to focus on education of proper waste disposal, open dumps, and unpermitted/permitted transfer stations. The County will continue to monitor the landfills through the closure/post closure periods. (NEW, Plan-1996)**

#### **RECOMMENDATIONS**

The Department anticipates inspecting additional unpermitted sites, as fly dumping incidences may increase when landfill tipping fees rise, and new waste bans are in place.

The Department also expects to monitor permitted transfer stations as they become sited. These sites are anticipated due to the lack of an in-County disposal facility. The two DuPage landfills, though they are closing, will be monitored for closure and post closure requirements. Groundwater, leachate and gas monitoring, aerial photography and land surveying will be performed to assure compliance by the operator during the closure and post closure periods.

Education may take a larger role in the program, as new bans at landfills occur, and businesses/residents are not always aware of these bans, and how to comply. Educational materials may need to be developed and then distributed to applicable associations. Forums and other mechanisms to distribute information may be established regarding waste disposal. The Solid Waste Education Center will serve as a distribution point for much of the educational material that is created. Areas that may need particular attention are Potentially Infectious Medical Waste (P.I.M.W.) and oil or other petroleum based waste.

The County has been receiving grant funding from the IEPA since the enforcement program began in 1986. The grant period is consistent with the State's fiscal year (July 1 - June 30), and covers a portion of all related costs. The level of funding once was as much as 70%, but as less funding has been made available to the IEPA, and since additional programs have started, the levels have dropped to the current 42%. Recently, House Bill 901 was passed, which reduced the IEPA's Solid Waste budget by \$ 2,000,000, or 33%, which is effective July 1, 1996. This action could reduce, or eliminate grant funding for the enforcement program from the IEPA. The County, along with other governmental entities, are seeking to recover this funding through other mechanisms.

#### **4.12 LAND BANKING**

The Solid Waste Committee discussed the idea of purchasing property for the purpose of potentially developing a solid waste management facility if the need developed. "Banking" of an appropriate amount of suitable property could function as an incentive to the private sector not to take advantage of waste generators by charging exorbitant waste disposal fees once either of the two landfills closed. After enough time passed, and it was determined that competitive rates would prevail for the long term, the property could be sold. During the time the property is held, improvements to the parcel could be made so it could be left as a natural area or contamination removed to reduce the threat of environmental degradation.

The purchase of property for the purpose of land banking as outlined above was not approved by the Solid Waste Committee.

## ***APPENDICES***

---

**APPENDIX A. DOCUMENT SUMMARIES (Publications) 1991-1996****I. WASTE CHARACTERIZATION**

**The Waste Stream Characterization Study** (SCS Engineers, February 1995) was based on sampling and analysis of disposed waste taken from waste collection vehicles at two landfills, Mallard Lake and Greene Valley, located in the County. The study was performed over a one week period during December 1994 and does not take into account seasonal variations. Study results indicate that DuPage County residents generated significantly more paper and construction and demolition material than is typically found in national average estimates and only slightly higher rates of aluminum, plastic and food waste. However, DuPage County residents generated less than the national average rate for landscape waste, wood waste, textiles/rubber/leather, glass and ferrous metal.

**II. SOURCE REDUCTION, REUSE, AND RECYCLING**

**A. The Waste Reduction Directory (formerly the Recycling Yellow Pages)** (DuPage County Solid Waste Department, July 1988 ) is a comprehensive reference guide, published once or twice a year, listing updates and new information on waste reduction, reuse and recycling in DuPage County. Sections of the publication consist of useful information about drop-off centers, curbside collection programs, haulers, reclamation of automotive products, buy-back centers, household hazardous waste, construction and demolition material recycling resale and thrift shops, multi-family and commercial recycling, landfills, and landscape waste.

**B. The New DuPage Shopper** (DuPage Environmental Awareness Center, November 1990) booklet was produced to assist consumers in reducing, reusing and recycling household products. Consumers were advised to choose products that are reusable, recyclable, and do not use excessive packaging. The brochure offers creative tips for reusing household items and encourages purchasing products made from recycled products to "close the loop."

**C. Reduce Waste and Recycle Guides** (Cooperative Extension Service, June 1993) is a set of five booklets focusing on waste reduction and recycling programs for hospitals, theaters, office buildings, automotive repair shops and hotels/eating and drinking establishments. The guides provide the commercial sector with a specific design to assist in waste reduction by reducing waste at the source through precycling, recycling, and reusing materials, and pursuing additional waste management alternatives.

**D. The Three Rs** (DuPage Environmental Awareness Center, May 1993) guide to waste reduction, reuse and recycling, is a current version of "The New DuPage Shopper," which includes definitions, plastic code information, case studies, and steps for implementing an office paper recycling program.

E. **Waste Watch Newsletter** (DuPage County Solid Waste Department, March 1993) was created to update DuPage County municipalities and townships on County solid waste issues and programs, latest trends and developments and current legislation and regulations affecting local solid waste programs.

F. **White Paper on White Goods** (DuPage County Solid Waste Department, September 1992) was created as informational summary for DuPage County residents and governmental agencies pertaining to white goods disposal issues. The newsletter discussed current regulations established specifically for white goods and made recommendations on how to handle white goods before and during disposal. A list is provided siting locations that accept white goods for disposal.

### III. **LANDSCAPE WASTE**

A. **Recycle Your Lawn With Y. Baggit** (DuPage County Solid Waste Department, August 1989, revised August 1995) brochure encourages residents to manage landscape waste such as leaves and grass clippings in their own backyard.

B. **Composting In Your Backyard With Y. Baggit** (DuPage County Solid Waste Department, August 1989) brochure recommends that residents follow a step-by-step procedure to construct and use a compost container in their own backyard. A list of helpful composting tips is also provided.

A mulch insert was also created to be used as supplementary material for either brochure. This insert **defines** mulch, recommends its use, and describes its benefits.

### IV. **SOLID WASTE MANAGEMENT PROGRAMS/ACTIVITIES**

A. **CES Commercial Outreach Plan & Implementation Strategy** (Cooperative Extension Service, June 1993) is a detailed outline of CES' projected goals to increase waste reduction/recycling efforts in DuPage County's commercial sector. The outreach plan proposed to create five different model industry programs with training handbooks and program guides. Volunteers would be recruited and trained to develop at least one program per model industry. Furthermore, several forms included in the plan were created to assist in recruiting volunteers, such as the master recycler application form. The status report form and other forms would be utilized to monitor and evaluate the program.

B. **DuPage County Solid Waste Department** (DuPage County Solid Waste Department, September 1994) brochure describes the Solid Waste Department's goals and programs. Included in this description is a list of current DuPage County Solid Waste Department programs, Education Center activities and available resources, and an overview of the School Recycling Assistance Program (SCRAP) and the DuPage County Intermediate Processing Facility (IPF). A list of DuPage County Solid Waste Department publications is also documented.

**C. DuPage County Solid Waste Education Center** (DuPage County Solid Waste Department, September 1994) brochure describes the activities and educational information available to educate professional groups, community groups, residents and school children about waste reduction, including reuse, recycling, recycled content products and other solid waste management issues through the DuPage County Solid Waste Education Center.

**D. The Needs Assessment Report** (Slack Brown and Myers, August 1993) was conducted to determine how the DuPage County Education Center would be most effective for residents and businesses. Assessment evaluations included interviews, a business focus group, a teacher focus group, a mail survey and a literature and information search. Results indicated that people are primarily interested in recycling and waste reduction. Therefore, an education coordinator would be necessary to manage the education center and maintain current solid waste management information from a variety of sources. Residents also indicated a strong interest in the development of interactive and mobile displays and activities. Furthermore, the establishment of an outreach program was recommended to assist in educating businesses and school boards about alternative waste management resources.

**E. Ripples** (School Recycling Assistance Program, November 1991 - current) monthly newsletter summarizes the school outreach program activities of the DuPage County Solid Waste Education Center. The newsletter contains information relating to waste reduction, including reuse and recycling endeavors accomplished through classes, workshops, the earth flag program, conferences, educational performances, new ideas, crafts, and interesting facts.

## V. **SUMMARY REPORTS**

**A. DuPage County Waste to Date Annual Report** 1991, 1992/1993, and 1994 (DuPage County Solid Waste Department, May 1992, March 1995, and December 1995) is a publication which reviews policies and programs established to meet current solid waste disposal needs while representing the achievements of DuPage County residents, businesses and government agencies confronting solid waste management issues. The report documents the amount of recyclable materials collected from municipalities and townships, waste generation, collection systems and rates, landfill disposal activity, solid waste inspection activity, recyclables processing operations, solid waste education programs, and waste diversion statistics.

**B. Final Report - University of Illinois Cooperative Extension Service Commercial Sector Update: October, 1993** (Cooperative Extension Service, October 1993) presents an overview of the six waste reduction/recycling training handbooks and the master commercial recycler program. The main focus of the report is on the master commercial recycler program which provides details regarding the participant selection process,

supplemental educational materials, program implementation and a list of topics that were addressed during training.

C. **Final Summary Report** (Slack Brown and Myers, September 1993) is a detailed outline which highlights the overall effectiveness of Slack Brown and Myers' goals and recommendations for achieving recognition for the DuPage County education center.

## **VI. MULTI-MATERIAL RECYCLING DROP-OFF CENTER DESIGNS AND IMPROVEMENTS**

A. **Preliminary Design of a Multi-Material Recycling Drop-Off Center for DuPage County, Illinois** (Patrick Engineering Inc., August 1992) presents a standardized permanent regional multi-material recycling center design for reducing operational costs and increasing availability to the community. The report includes recommendations, outline specifications, recyclable material research, community participation options, and a project budget. The base structure and site work has a cost estimate of \$121,600. Three options are available for a roof system. Option 1 - a fabric structure, has an estimated cost of \$41,400. Option 2 - a shingled gabled roof, has an estimated cost of \$20,700 and Option 3 - a flat roof system, has an estimated cost of \$12,500. The minimum final cost estimate based on the roof system Option 3 is \$134,100. However, community participation options could result in a potential budget reduction of \$34,150, resulting in a potential cost of \$99,950.

B. **Scope of Work Description and Estimated Costs for the Proposed Capital Improvements at the DuPage County Intermediate Processing Facility** (Patrick Engineering Inc., November 1993) presents a report which includes an executive summary, scope of work and cost estimates proposed for capital improvements at the Intermediate Processing Facility. The capital improvement descriptions, rates and cost estimates are provided in detail for a total project estimated cost of \$1,743,843.

## **VII. SOLID WASTE MANAGEMENT TECHNOLOGIES/SYSTEMS**

**Final Review of Statements of Qualifications from Businesses Interested in Providing Solid Waste Processing, Disposal, or Transfer Capabilities** (DuPage County Solid Waste Department, October 1994) is an extensive report which evaluates qualified companies who are interested in providing a processing, disposal, transfer or other facility for the mixed municipal waste stream generated within DuPage County. The report separated the respondents into qualified and non-qualified companies. Then the qualified companies' state-of-the-art reference systems were analyzed using a weighted matrix consisting of thirteen criteria areas. The weighting factor was multiplied by the evaluation score and the sums totaled for a final score. Scores are relative to other scores in the same category. The results were then categorized as new, emerging, or existing technology. The matrix scores were intended to serve as a guide for the DuPage County Solid Waste Committee in developing a scope for a potential Request for Proposals.

**APPENDIX B. Exhibits 4-1 through 4-9 from the Waste Stream Characterization for DuPage County, Illinois, February 1995**

**EXHIBIT 4-1  
SUMMARY OF SINGLE-FAMILY RESIDENTIAL COMPOSITION  
MALLARD LAKE LANDFILL**

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>PAPER</b>				
Newsprint	7.1%	7.1%	4.9%	9.3%
OCC/Kraft Paper	6.6%	4.2%	5.3%	7.9%
Glossy/Magazines	3.5%	3.0%	2.5%	4.4%
Mixed Paper	10.5%	8.1%	8.0%	13.1%
Office/Computer Paper	1.6%	2.6%	0.8%	2.4%
Coated Paper	0.5%	1.0%	0.2%	0.9%
Wet Strength Carrier Stock	0.5%	0.5%	0.3%	0.6%
Miscellaneous Paper	13.8%	5.8%	12.0%	15.7%
<b>Total Paper</b>	<b>44.2%</b>			
<b>PLASTIC</b>				
PET (#1) Containers	0.4%	0.4%	0.3%	0.5%
Clear HDPE (#2) Containers	0.4%	0.5%	0.3%	0.6%
Color HDPE (#2) Containers	0.5%	0.5%	0.3%	0.6%
PVC (#3) Containers	<0.1%	0.1%	<0.1%	0.1%
LDPE (#4) Containers	<0.1%	0.0%	<0.1%	<0.1%
PP (#5) Containers	0.1%	0.2%	<0.1%	0.2%
Expanded Polystyrene (#6)	0.7%	0.6%	0.5%	0.8%
Rigid PS (#6) Containers	0.4%	0.4%	0.3%	0.5%
Other (#7) Containers	<0.1%	0.1%	<0.1%	<0.1%
Films & Bags	5.7%	2.7%	4.8%	6.5%
Miscellaneous Plastic	1.9%	1.9%	1.3%	2.5%
<b>Total Plastic</b>	<b>10.2%</b>			
<b>ORGANICS</b>				
Vegetative Food Waste	12.5%	6.6%	10.4%	14.5%
Other Food Waste	1.8%	2.1%	1.1%	2.4%
Wood	1.0%	2.4%	0.2%	1.7%
Textiles/Rubber/Leather	4.6%	4.5%	3.2%	6.0%
Disposable Diapers	3.5%	2.9%	2.5%	4.4%
Miscellaneous Organics	3.5%	3.6%	2.4%	4.6%
<b>Total Organics</b>	<b>26.7%</b>			
<b>YARD WASTE</b>				
Grass/Leaves	1.6%	5.4%	<0.1%	3.3%
Brush/Prunings/Stumps	0.8%	2.7%	<0.1%	1.6%
<b>Total Yard Waste</b>	<b>2.3%</b>			
<b>CONSTRUCTION/DEMOLITION</b>				
Treated Lumber	3.4%	8.2%	0.8%	5.9%
Untreated Lumber	0.9%	2.7%	0.1%	1.8%
Concrete/Brick/Asphalt	<0.1%	0.4%	<0.1%	0.2%
Other	3.0%	5.5%	1.3%	4.8%
<b>Total C&amp;D</b>	<b>7.4%</b>			

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

EXHIBIT 4-1 (continued)  
SUMMARY OF SINGLE-FAMILY RESIDENTIAL COMPOSITION  
MALLARD LAKE LANDFILL

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>METAL</b>				
Aluminum Cans	0.6%	0.7%	0.4%	0.9%
Bi-Metal Cans	0.3%	0.4%	0.2%	0.5%
Tin Cans	1.5%	1.2%	1.1%	1.9%
Foil	0.4%	0.4%	0.2%	0.5%
Other Ferrous	2.7%	4.4%	1.3%	4.1%
Other Non-Ferrous	0.1%	0.4%	<0.1%	0.2%
<b>Total Metal</b>	<b>5.7%</b>			
<b>GLASS</b>				
Food/Drink Containers	2.4%	2.1%	1.7%	3.0%
Other Glass	0.3%	0.6%	0.1%	0.5%
<b>Total Glass</b>	<b>2.7%</b>			
<b>SPECIAL WASTES</b>				
White Goods	<0.1%	0.0%	<0.1%	<0.1%
Tires	<0.1%	0.0%	<0.1%	<0.1%
Used Oil	<0.1%	0.0%	<0.1%	<0.1%
<b>Total Special Waste</b>	<b>&lt;0.1%</b>			
<b>INORGANIC</b>				
	0.5%	1.3%	<0.1%	0.9%
<b>HOUSE. HAZARDOUS WASTE</b>				
Empty HHW Containers	0.1%	0.4%	<0.1%	0.3%
Dry Cell (alkaline)	<0.1%	0.1%	<0.1%	<0.1%
Dry Cell (non-alkaline)	<0.1%	0.0%	<0.1%	<0.1%
Lead-Acid Batteries	<0.1%	0.0%	<0.1%	<0.1%
Oil-Based Paint	<0.1%	0.2%	<0.1%	0.1%
Latex Paint	<0.1%	0.0%	<0.1%	<0.1%
Other Flammable	<0.1%	0.0%	<0.1%	<0.1%
Pesticides/Poisons	<0.1%	0.0%	<0.1%	<0.1%
Medical Wastes	<0.1%	0.0%	<0.1%	<0.1%
Fluorescent Tubes	<0.1%	0.0%	<0.1%	<0.1%
Oil Filters	<0.1%	0.2%	<0.1%	0.1%
Other HHW	<0.1%	0.0%	<0.1%	<0.1%
<b>Total HHW</b>	<b>0.3%</b>			
<b>TOTAL</b>	<b>100.0%</b>			

- Note: 1. Composition based on 39 samples.  
2. Confidence Limits are shown at the 95 percent level.

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

EXHIBIT 4-2  
SUMMARY OF SINGLE-FAMILY RESIDENTIAL COMPOSITION  
GREENE VALLEY LANDFILL

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>PAPER</b>				
Newsprint	5.7%	3.9%	4.3%	7.1%
OCC/Kraft Paper	5.6%	4.5%	3.9%	7.2%
Glossy/Magazines	7.5%	4.6%	5.9%	9.1%
Mixed Paper	4.4%	3.2%	3.3%	5.6%
Office/Computer Paper	1.8%	2.5%	0.9%	2.7%
Coated Paper	1.3%	1.5%	0.7%	1.8%
Wet Strength Carrier Stock	0.5%	0.5%	0.3%	0.7%
Miscellaneous Paper	19.3%	7.6%	16.6%	22.0%
<b>Total Paper</b>	<b>46.0%</b>			
<b>PLASTIC</b>				
PET (#1) Containers	0.7%	0.6%	0.5%	0.9%
Clear HDPE (#2) Containers	0.5%	0.5%	0.4%	0.7%
Color HDPE (#2) Containers	0.5%	0.5%	0.4%	0.7%
PVC (#3) Containers	0.1%	0.2%	<0.1%	0.2%
LDPE (#4) Containers	0.2%	0.2%	<0.1%	0.2%
PP (#5) Containers	0.3%	0.3%	0.2%	0.4%
Expanded Polystyrene (#6)	0.7%	0.5%	0.5%	0.9%
Rigid PS (#6) Containers	0.6%	0.4%	0.5%	0.8%
Other (#7) Containers	0.1%	0.2%	<0.1%	0.2%
Films & Bags	5.9%	3.0%	4.8%	6.9%
Miscellaneous Plastic	3.1%	4.3%	1.6%	4.7%
<b>Total Plastic</b>	<b>12.9%</b>			
<b>ORGANICS</b>				
Vegetative Food Waste	9.1%	4.6%	7.4%	10.7%
Other Food Waste	2.6%	3.1%	1.5%	3.8%
Wood	0.8%	1.3%	0.3%	1.2%
Textiles/Rubber/Leather	4.1%	3.8%	2.7%	5.5%
Disposable Diapers	5.9%	4.6%	4.2%	7.5%
Miscellaneous Organics	6.1%	5.2%	4.2%	8.0%
<b>Total Organics</b>	<b>28.6%</b>			
<b>YARD WASTE</b>				
Grass/Leaves	0.9%	1.9%	0.3%	1.6%
Brush/Prunings/Stumps	0.4%	0.9%	<0.1%	0.7%
<b>Total Yard Waste</b>	<b>1.3%</b>			
<b>CONSTRUCTION/DEMOLITION</b>				
Treated Lumber	0.4%	1.1%	<0.1%	0.8%
Untreated Lumber	0.3%	1.0%	<0.1%	0.7%
Concrete/Brick/Asphalt	<0.1%	0.0%	<0.1%	<0.1%
Other	0.5%	1.5%	<0.1%	1.0%
<b>Total C&amp;D</b>	<b>1.2%</b>			

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

EXHIBIT 4-2 (continued)  
SUMMARY OF SINGLE-FAMILY RESIDENTIAL COMPOSITION  
GREENE VALLEY LANDFILL

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>METAL</b>				
Aluminum Cans	0.6%	0.4%	0.5%	0.7%
Bi-Metal Cans	0.2%	0.3%	0.1%	0.3%
Tin Cans	1.5%	0.8%	1.2%	1.8%
Foil	0.6%	0.5%	0.5%	0.8%
Other Ferrous	1.8%	2.5%	0.9%	2.7%
Other Non-Ferrous	1.0%	2.1%	0.3%	1.7%
<b>Total Metal</b>	<b>5.8%</b>			
<b>GLASS</b>				
Food/Drink Containers	2.8%	2.1%	2.0%	3.5%
Other Glass	0.4%	0.8%	0.2%	0.7%
<b>Total Glass</b>	<b>3.2%</b>			
<b>SPECIAL WASTES</b>				
White Goods	<0.1%	0.0%	<0.1%	<0.1%
Tires	<0.1%	0.0%	<0.1%	<0.1%
Used Oil	<0.1%	0.0%	<0.1%	<0.1%
<b>Total Special Waste</b>	<b>&lt;0.1%</b>			
<b>INORGANIC</b>				
	0.4%	0.9%	0.1%	0.7%
<b>HOUSE. HAZARDOUS WASTE</b>				
Empty HHW Containers	0.3%	0.6%	<0.1%	0.5%
Dry Cell (alkaline)	0.1%	0.2%	<0.1%	0.2%
Dry Cell (non-alkaline)	<0.1%	0.0%	<0.1%	<0.1%
Lead-Acid Batteries	<0.1%	0.0%	<0.1%	<0.1%
Oil-Based Paint	<0.1%	0.0%	<0.1%	<0.1%
Latex Paint	<0.1%	0.0%	<0.1%	<0.1%
Other Flammable	<0.1%	0.2%	<0.1%	0.1%
Pesticides/Poisons	<0.1%	0.0%	<0.1%	<0.1%
Medical Wastes	<0.1%	0.1%	<0.1%	<0.1%
Fluorescent Tubes	<0.1%	0.0%	<0.1%	<0.1%
Oil Filters	<0.1%	0.1%	<0.1%	<0.1%
Other HHW	<0.1%	0.2%	<0.1%	0.1%
<b>Total HHW</b>	<b>0.5%</b>			
<b>TOTAL</b>	<b>100.0%</b>			

Note: 1. Composition based on 30 samples.  
2. Confidence Limits are shown at the 95 percent level.

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

**EXHIBIT 4-3  
SUMMARY OF MULTI-FAMILY RESIDENTIAL COMPOSITION  
MALLARD LAKE LANDFILL**

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>PAPER</b>				
Newsprint	6.5%	8.0%	1.3%	11.8%
OCC/Kraft Paper	11.5%	6.9%	7.0%	16.0%
Glossy/Magazines	4.7%	3.6%	2.4%	7.1%
Mixed Paper	9.5%	12.7%	1.2%	17.8%
Office/Computer Paper	0.7%	1.1%	<0.1%	1.4%
Coated Paper	2.1%	4.4%	<0.1%	4.9%
Wet Strength Carrier Stock	2.1%	3.5%	<0.1%	4.4%
Miscellaneous Paper	9.5%	8.8%	3.8%	15.3%
<b>Total Paper</b>	<b>46.7%</b>			
<b>PLASTIC</b>				
PET (#1) Containers	0.8%	0.8%	0.3%	1.3%
Clear HDPE (#2) Containers	0.6%	0.6%	0.2%	1.0%
Color HDPE (#2) Containers	0.5%	0.9%	<0.1%	1.1%
PVC (#3) Containers	<0.1%	0.2%	<0.1%	0.2%
LDPE (#4) Containers	<0.1%	0.0%	<0.1%	<0.1%
PP (#5) Containers	0.2%	0.4%	<0.1%	0.5%
Expanded Polystyrene (#6)	0.7%	0.8%	0.2%	1.3%
Rigid PS (#6) Containers	0.9%	1.2%	0.1%	1.7%
Other (#7) Containers	<0.1%	0.1%	<0.1%	<0.1%
Films & Bags	7.0%	3.2%	4.9%	9.1%
Miscellaneous Plastic	2.0%	3.3%	<0.1%	4.1%
<b>Total Plastic</b>	<b>12.8%</b>			
<b>ORGANICS</b>				
Vegetative Food Waste	15.3%	11.6%	7.7%	22.9%
Other Food Waste	1.7%	2.5%	<0.1%	3.3%
Wood	0.9%	1.7%	<0.1%	2.0%
Textiles/Rubber/Leather	4.3%	5.0%	1.1%	7.6%
Disposable Diapers	6.0%	14.4%	<0.1%	15.4%
Miscellaneous Organics	1.6%	2.4%	<0.1%	3.2%
<b>Total Organics</b>	<b>29.8%</b>			
<b>YARD WASTE</b>				
Grass/Leaves	<0.1%	0.0%	<0.1%	<0.1%
Brush/Prunings/Stumps	<0.1%	0.0%	<0.1%	<0.1%
<b>Total Yard Waste</b>	<b>&lt;0.1%</b>			
<b>CONSTRUCTION/DEMOLITION</b>				
Treated Lumber	0.2%	0.7%	<0.1%	0.6%
Untreated Lumber	<0.1%	0.0%	<0.1%	<0.1%
Concrete/Brick/Asphalt	<0.1%	0.0%	<0.1%	<0.1%
Other	0.7%	2.0%	<0.1%	2.0%
<b>Total C&amp;D</b>	<b>0.9%</b>			

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

EXHIBIT 4-3 (continued)  
SUMMARY OF MULTI-FAMILY RESIDENTIAL COMPOSITION  
MALLARD LAKE LANDFILL

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>METAL</b>				
Aluminum Cans	1.0%	0.8%	0.4%	1.5%
Bi-Metal Cans	0.4%	0.5%	<0.1%	0.7%
Tin Cans	1.7%	1.3%	0.8%	2.6%
Foil	0.4%	0.4%	0.2%	0.7%
Other Ferrous	0.8%	1.5%	<0.1%	1.7%
Other Non-Ferrous	0.6%	1.4%	<0.1%	1.5%
<b>Total Metal</b>	<b>4.8%</b>			
<b>GLASS</b>				
Food/Drink Containers	4.2%	4.3%	1.4%	7.0%
Other Glass	0.3%	0.8%	<0.1%	0.8%
<b>Total Glass</b>	<b>4.5%</b>			
<b>SPECIAL WASTES</b>				
White Goods	<0.1%	0.0%	<0.1%	<0.1%
Tires	<0.1%	0.0%	<0.1%	<0.1%
Used Oil	<0.1%	0.2%	<0.1%	0.2%
<b>Total Special Waste</b>	<b>&lt;0.1%</b>			
<b>INORGANIC</b>				
	0.3%	1.0%	<0.1%	1.0%
<b>HOUSE HAZARDOUS WASTE</b>				
Empty HHW Containers	<0.1%	0.1%	<0.1%	0.1%
Dry Cell (alkaline)	<0.1%	0.0%	<0.1%	<0.1%
Dry Cell (non-alkaline)	<0.1%	0.0%	<0.1%	<0.1%
Lead-Acid Batteries	<0.1%	0.0%	<0.1%	<0.1%
Oil-Based Paint	<0.1%	0.0%	<0.1%	<0.1%
Latex Paint	<0.1%	0.0%	<0.1%	<0.1%
Other Flammable	<0.1%	0.0%	<0.1%	<0.1%
Pesticides/Poisons	<0.1%	0.0%	<0.1%	<0.1%
Medical Wastes	<0.1%	0.0%	<0.1%	<0.1%
Fluorescent Tubes	<0.1%	0.0%	<0.1%	<0.1%
Oil Filters	<0.1%	0.0%	<0.1%	<0.1%
Other HHW	<0.1%	0.0%	<0.1%	<0.1%
<b>Total HHW</b>	<b>&lt;0.1%</b>			
<b>TOTAL</b>	<b>100.0%</b>			

- Note: 1. Composition based on 9 samples.  
2. Confidence Limits are shown at the 95 percent level.

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

EXHIBIT 4-4  
SUMMARY OF MULTI-FAMILY RESIDENTIAL COMPOSITION  
GREENE VALLEY LANDFILL

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>PAPER</b>				
Newsprint	10.3%	5.7%	7.9%	12.7%
OCC/Kraft Paper	8.0%	4.4%	6.1%	9.8%
Glossy/Magazines	6.0%	3.6%	4.6%	7.5%
Mixed Paper	4.1%	2.8%	2.9%	5.3%
Office/Computer Paper	1.8%	2.0%	0.9%	2.6%
Coated Paper	1.0%	0.7%	0.7%	1.3%
Wet Strength Carrier Stock	0.5%	0.6%	0.3%	0.8%
Miscellaneous Paper	16.8%	6.8%	14.0%	19.6%
Total Paper	48.5%			
<b>PLASTIC</b>				
PET (#1) Containers	0.9%	0.8%	0.6%	1.2%
Clear HDPE (#2) Containers	0.7%	0.9%	0.3%	1.1%
Color HDPE (#2) Containers	0.9%	0.8%	0.6%	1.2%
PVC (#3) Containers	<0.1%	0.2%	<0.1%	0.1%
LDPE (#4) Containers	<0.1%	0.2%	<0.1%	0.1%
PP (#5) Containers	0.2%	0.4%	<0.1%	0.4%
Expanded Polystyrene (#6)	0.6%	0.5%	0.4%	0.8%
Rigid PS (#6) Containers	0.8%	0.6%	0.6%	1.1%
Other (#7) Containers	<0.1%	0.2%	<0.1%	0.2%
Films & Bags	5.9%	2.5%	4.9%	7.0%
Miscellaneous Plastic	2.5%	2.8%	1.4%	3.7%
Total Plastic	12.8%			
<b>ORGANICS</b>				
Vegetative Food Waste	6.9%	3.6%	5.4%	8.4%
Other Food Waste	1.7%	1.7%	1.0%	2.4%
Wood	1.0%	2.1%	0.2%	1.9%
Textiles/Rubber/Leather	4.5%	5.1%	2.4%	6.7%
Disposable Diapers	3.1%	3.6%	1.6%	4.6%
Miscellaneous Organics	6.8%	5.8%	4.4%	9.3%
Total Organics	24.2%			
<b>YARD WASTE</b>				
Grass/Leaves	0.5%	1.7%	<0.1%	1.2%
Brush/Prunings/Stumps	0.6%	2.6%	<0.1%	1.7%
Total Yard Waste	1.1%			
<b>CONSTRUCTION/DEMOLITION</b>				
Treated Lumber	0.2%	0.8%	<0.1%	0.5%
Untreated Lumber	0.5%	1.6%	<0.1%	1.1%
Concrete/Brick/Asphalt	<0.1%	0.0%	<0.1%	<0.1%
Other	1.3%	2.5%	0.2%	2.3%
Total C&D	1.9%			

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

EXHIBIT 4-4 (continued)  
SUMMARY OF MULTI-FAMILY RESIDENTIAL COMPOSITION  
GREENE VALLEY LANDFILL

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>METAL</b>				
Aluminum Cans	1.0%	0.6%	0.8%	1.3%
Bi-Metal Cans	0.2%	0.3%	0.1%	0.4%
Tin Cans	1.5%	0.9%	1.1%	1.8%
Foil	0.6%	0.5%	0.4%	0.8%
Other Ferrous	2.2%	3.4%	0.8%	3.6%
Other Non-Ferrous	0.6%	1.2%	<0.1%	1.1%
<b>Total Metal</b>	<b>6.1%</b>			
<b>GLASS</b>				
Food/Drink Containers	3.6%	2.6%	2.6%	4.7%
Other Glass	0.4%	0.7%	0.1%	0.7%
<b>Total Glass</b>	<b>4.1%</b>			
<b>SPECIAL WASTES</b>				
White Goods	<0.1%	0.0%	<0.1%	<0.1%
Tires	<0.1%	0.0%	<0.1%	<0.1%
Used Oil	<0.1%	0.0%	<0.1%	<0.1%
<b>Total Special Waste</b>	<b>&lt;0.1%</b>			
<b>INORGANIC</b>	<b>1.0%</b>	<b>3.8%</b>	<b>&lt;0.1%</b>	<b>2.6%</b>
<b>HOUSE. HAZARDOUS WASTE</b>				
Empty HHW Containers	0.2%	0.3%	<0.1%	0.3%
Dry Cell (alkaline)	<0.1%	0.2%	<0.1%	0.2%
Dry Cell (non-alkaline)	<0.1%	0.1%	<0.1%	<0.1%
Lead-Acid Batteries	<0.1%	0.0%	<0.1%	<0.1%
Oil-Based Paint	<0.1%	0.0%	<0.1%	<0.1%
Latex Paint	<0.1%	0.0%	<0.1%	<0.1%
Other Flammable	<0.1%	0.0%	<0.1%	<0.1%
Pesticides/Poisons	<0.1%	0.0%	<0.1%	<0.1%
Medical Wastes	<0.1%	0.0%	<0.1%	<0.1%
Fluorescent Tubes	<0.1%	0.0%	<0.1%	<0.1%
Oil Filters	<0.1%	0.0%	<0.1%	<0.1%
Other HHW	<0.1%	0.0%	<0.1%	<0.1%
<b>Total HHW</b>	<b>0.3%</b>			
<b>TOTAL</b>	<b>100.0%</b>			

Note: 1. Composition based on 22 samples.  
2. Confidence Limits are shown at the 95 percent level.

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

**EXHIBIT 4-5  
SUMMARY OF COMMERCIAL COMPOSITION  
MALLARD LAKE LANDFILL**

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>PAPER</b>				
Newsprint	6.0%	7.6%	3.5%	8.5%
OCC/Kraft Paper	15.4%	14.5%	10.6%	20.2%
Glossy/Magazines	4.1%	8.7%	1.2%	7.0%
Mixed Paper	9.2%	11.0%	5.5%	12.8%
Office/Computer Paper	5.3%	5.9%	3.3%	7.3%
Coated Paper	0.6%	1.0%	0.2%	0.9%
Wet Strength Carrier Stock	0.5%	1.1%	0.1%	0.8%
Miscellaneous Paper	9.6%	7.1%	7.2%	12.0%
<b>Total Paper</b>	<b>50.6%</b>			
<b>PLASTIC</b>				
PET (#1) Containers	0.4%	0.7%	0.2%	0.7%
Clear HDPE (#2) Containers	0.2%	0.4%	0.1%	0.4%
Color HDPE (#2) Containers	0.6%	1.0%	0.2%	0.9%
PVC (#3) Containers	<0.1%	0.3%	<0.1%	0.2%
LDPE (#4) Containers	<0.1%	0.0%	<0.1%	<0.1%
PP (#5) Containers	0.1%	0.4%	<0.1%	0.2%
Expanded Polystyrene (#6)	0.7%	0.9%	0.4%	1.0%
Rigid PS (#6) Containers	0.8%	2.8%	<0.1%	1.8%
Other (#7) Containers	<0.1%	0.3%	<0.1%	0.2%
Films & Bags	8.1%	10.8%	4.5%	11.6%
Miscellaneous Plastic	5.0%	10.2%	1.6%	8.4%
<b>Total Plastic</b>	<b>16.1%</b>			
<b>ORGANICS</b>				
Vegetative Food Waste	4.7%	5.9%	2.8%	6.7%
Other Food Waste	0.4%	1.6%	<0.1%	1.0%
Wood	7.5%	12.2%	3.5%	11.5%
Textiles/Rubber/Leather	2.0%	3.4%	0.9%	3.1%
Disposable Diapers	0.7%	1.4%	0.3%	1.2%
Miscellaneous Organics	1.2%	2.3%	0.4%	1.9%
<b>Total Organics</b>	<b>16.6%</b>			
<b>YARD WASTE</b>				
Grass/Leaves	0.7%	3.1%	<0.1%	1.7%
Brush/Prunings/Stumps	0.2%	0.7%	<0.1%	0.5%
<b>Total Yard Waste</b>	<b>1.0%</b>			
<b>CONSTRUCTION/DEMOLITION</b>				
Treated Lumber	0.6%	2.6%	<0.1%	1.5%
Untreated Lumber	1.6%	6.1%	<0.1%	3.6%
Concrete/Brick/Asphalt	0.4%	2.2%	<0.1%	1.1%
Other	1.7%	5.5%	<0.1%	3.5%
<b>Total C&amp;D</b>	<b>4.2%</b>			

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

EXHIBIT 4-5 (continued)  
SUMMARY OF COMMERCIAL COMPOSITION  
MALLARD LAKE LANDFILL

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>METAL</b>				
Aluminum Cans	0.6%	0.7%	0.4%	0.8%
Bi-Metal Cans	<0.1%	0.2%	<0.1%	0.1%
Tin Cans	0.5%	0.8%	0.2%	0.7%
Foil	0.3%	1.0%	<0.1%	0.6%
Other Ferrous	4.1%	7.6%	1.6%	6.6%
Other Non-Ferrous	0.5%	1.9%	<0.1%	1.1%
<b>Total Metal</b>	<b>6.0%</b>			
<b>GLASS</b>				
Food/Drink Containers	2.1%	3.4%	1.0%	3.2%
Other Glass	1.2%	5.7%	<0.1%	3.1%
<b>Total Glass</b>	<b>3.3%</b>			
<b>SPECIAL WASTES</b>				
White Goods	<0.1%	0.0%	<0.1%	<0.1%
Tires	<0.1%	0.0%	<0.1%	<0.1%
Used Oil	<0.1%	0.0%	<0.1%	<0.1%
<b>Total Special Waste</b>	<b>&lt;0.1%</b>			
<b>INORGANIC</b>	<b>1.0%</b>	<b>4.2%</b>	<b>&lt;0.1%</b>	<b>2.4%</b>
<b>HOUSE. HAZARDOUS WASTE</b>				
Empty HHW Containers	<0.1%	0.2%	<0.1%	0.1%
Dry Cell (alkaline)	<0.1%	0.0%	<0.1%	<0.1%
Dry Cell (non-alkaline)	<0.1%	0.0%	<0.1%	<0.1%
Lead-Acid Batteries	<0.1%	0.0%	<0.1%	<0.1%
Oil-Based Paint	<0.1%	0.3%	<0.1%	0.1%
Latex Paint	<0.1%	0.3%	<0.1%	0.2%
Other Flammable	0.1%	0.8%	<0.1%	0.4%
Pesticides/Poisons	<0.1%	0.0%	<0.1%	<0.1%
Medical Wastes	0.2%	1.0%	<0.1%	0.5%
Fluorescent Tubes	0.4%	2.6%	<0.1%	1.3%
Oil Filters	0.2%	1.0%	<0.1%	0.5%
Other HHW	0.1%	0.5%	<0.1%	0.3%
<b>Total HHW</b>	<b>1.2%</b>			
<b>TOTAL</b>	<b>100.0%</b>			

- Note: 1. Composition based on 35 samples.  
2. Confidence Limits are shown at the 95 percent level.

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

EXHIBIT 4-6  
SUMMARY OF COMMERCIAL COMPOSITION  
GREENE VALLEY LANDFILL

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>PAPER</b>				
Newsprint	9.9%	14.1%	5.0%	14.8%
OCC/Kraft Paper	12.7%	9.7%	9.3%	16.0%
Glossy/Magazines	3.9%	4.7%	2.2%	5.5%
Mixed Paper	7.4%	8.5%	4.5%	10.4%
Office/Computer Paper	9.0%	12.9%	4.5%	13.4%
Coated Paper	1.4%	2.4%	0.5%	2.2%
Wet Strength Carrier Stock	0.5%	0.8%	0.2%	0.8%
Miscellaneous Paper	12.7%	7.1%	10.2%	15.2%
Total Paper	57.4%			
<b>PLASTIC</b>				
PET (#1) Containers	0.4%	0.3%	0.2%	0.5%
Clear HDPE (#2) Containers	0.7%	0.7%	0.4%	0.9%
Color HDPE (#2) Containers	0.6%	1.0%	0.3%	1.0%
PVC (#3) Containers	<0.1%	0.0%	<0.1%	<0.1%
LDPE (#4) Containers	<0.1%	0.1%	<0.1%	<0.1%
PP (#5) Containers	0.2%	0.5%	<0.1%	0.3%
Expanded Polystyrene (#6)	0.6%	0.7%	0.4%	0.8%
Rigid PS (#6) Containers	0.7%	0.7%	0.5%	1.0%
Other (#7) Containers	<0.1%	0.1%	<0.1%	<0.1%
Films & Bags	4.5%	2.3%	3.7%	5.3%
Miscellaneous Plastic	3.0%	7.1%	0.6%	5.5%
Total Plastic	10.8%			
<b>ORGANICS</b>				
Vegetative Food Waste	9.6%	13.0%	5.1%	14.1%
Other Food Waste	1.7%	3.0%	0.6%	2.7%
Wood	1.6%	4.4%	<0.1%	3.1%
Textiles/Rubber/Leather	1.8%	2.2%	1.1%	2.6%
Disposable Diapers	2.1%	4.1%	0.7%	3.6%
Miscellaneous Organics	3.3%	5.1%	1.5%	5.0%
Total Organics	20.1%			
<b>YARD WASTE</b>				
Grass/Leaves	<0.1%	0.4%	<0.1%	0.2%
Brush/Prunings/Stumps	<0.1%	0.2%	<0.1%	0.2%
Total Yard Waste	0.2%			
<b>CONSTRUCTION/DEMOLITION</b>				
Treated Lumber	0.5%	2.3%	<0.1%	1.3%
Untreated Lumber	2.1%	7.0%	<0.1%	4.5%
Concrete/Brick/Asphalt	<0.1%	0.0%	<0.1%	<0.1%
Other	0.6%	1.9%	<0.1%	1.3%
Total C&D	3.3%			

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

EXHIBIT 4-6 (continued)  
SUMMARY OF COMMERCIAL COMPOSITION  
GREENE VALLEY LANDFILL

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>METAL</b>				
Aluminum Cans	0.8%	0.5%	0.6%	0.9%
Bi-Metal Cans	<0.1%	0.2%	<0.1%	0.1%
Tin Cans	1.3%	1.7%	0.7%	1.9%
Foil	0.5%	0.9%	0.2%	0.8%
Other Ferrous	1.6%	2.8%	0.7%	2.6%
Other Non-Ferrous	1.1%	2.5%	0.2%	1.9%
<b>Total Metal</b>	<b>5.3%</b>			
<b>GLASS</b>				
Food/Drink Containers	1.4%	1.4%	0.9%	1.9%
Other Glass	0.1%	0.4%	<0.1%	0.3%
<b>Total Glass</b>	<b>1.5%</b>			
<b>SPECIAL WASTES</b>				
White Goods	<0.1%	0.0%	<0.1%	<0.1%
Tires	<0.1%	0.0%	<0.1%	<0.1%
Used Oil	<0.1%	0.0%	<0.1%	<0.1%
<b>Total Special Waste</b>	<b>&lt;0.1%</b>			
<b>INORGANIC</b>	<b>0.3%</b>	<b>1.0%</b>	<b>&lt;0.1%</b>	<b>0.6%</b>
<b>HOUSE. HAZARDOUS WASTE</b>				
Empty HHW Containers	0.1%	0.7%	<0.1%	0.4%
Dry Cell (alkaline)	<0.1%	0.1%	<0.1%	<0.1%
Dry Cell (non-alkaline)	<0.1%	0.0%	<0.1%	<0.1%
Lead-Acid Batteries	<0.1%	0.0%	<0.1%	<0.1%
Oil-Based Paint	<0.1%	0.0%	<0.1%	<0.1%
Latex Paint	<0.1%	0.0%	<0.1%	<0.1%
Other Flammable	<0.1%	0.0%	<0.1%	<0.1%
Pesticides/Poisons	<0.1%	0.0%	<0.1%	<0.1%
Medical Wastes	0.2%	0.9%	<0.1%	0.5%
Fluorescent Tubes	<0.1%	0.0%	<0.1%	<0.1%
Oil Filters	0.6%	3.4%	<0.1%	1.8%
Other HHW	<0.1%	0.0%	<0.1%	<0.1%
<b>Total HHW</b>	<b>1.0%</b>			
<b>TOTAL</b>	<b>100.0%</b>			

- Note: 1. Composition based on 32 samples.  
2. Confidence Limits are shown at the 95 percent level.

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

**EXHIBIT 4-7  
SUMMARY OF MIXED LOADS COMPOSITION  
DUPAGE COUNTY**

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>PAPER</b>				
Newsprint	7.5%	4.6%	4.1%	10.9%
OCC/Kraft Paper	20.3%	20.9%	4.8%	35.7%
Glossy/Magazines	2.7%	3.0%	0.5%	5.0%
Mixed Paper	8.1%	10.2%	0.5%	15.6%
Office/Computer Paper	5.4%	9.5%	<0.1%	12.4%
Coated Paper	0.2%	0.2%	<0.1%	0.4%
Wet Strength Carrier Stock	<0.1%	0.1%	<0.1%	0.1%
Miscellaneous Paper	12.2%	12.2%	3.1%	21.3%
<b>Total Paper</b>	<b>56.4%</b>			
<b>PLASTIC</b>				
PET (#1) Containers	0.2%	0.2%	<0.1%	0.4%
Clear HDPE (#2) Containers	0.3%	0.3%	<0.1%	0.5%
Color HDPE (#2) Containers	0.2%	0.4%	<0.1%	0.5%
PVC (#3) Containers	<0.1%	0.2%	<0.1%	0.2%
LDPE (#4) Containers	<0.1%	0.0%	<0.1%	<0.1%
PP (#5) Containers	<0.1%	0.0%	<0.1%	<0.1%
Expanded Polystyrene (#6)	0.7%	0.9%	<0.1%	1.4%
Rigid PS (#6) Containers	0.2%	0.2%	0.1%	0.3%
Other (#7) Containers	<0.1%	0.0%	<0.1%	<0.1%
Films & Bags	5.0%	3.8%	2.2%	7.8%
Miscellaneous Plastic	1.6%	1.9%	0.2%	2.9%
<b>Total Plastic</b>	<b>8.3%</b>			
<b>ORGANICS</b>				
Vegetative Food Waste	12.8%	13.9%	2.5%	23.2%
Other Food Waste	5.1%	7.0%	<0.1%	10.3%
Wood	3.9%	10.2%	<0.1%	11.4%
Textiles/Rubber/Leather	1.1%	1.9%	<0.1%	2.5%
Disposable Diapers	0.7%	1.2%	<0.1%	1.6%
Miscellaneous Organics	2.6%	3.1%	0.3%	4.9%
<b>Total Organics</b>	<b>26.2%</b>			
<b>YARD WASTE</b>				
Grass/Leaves	<0.1%	0.0%	<0.1%	<0.1%
Brush/Prunings/Stumps	<0.1%	0.0%	<0.1%	<0.1%
<b>Total Yard Waste</b>	<b>&lt;0.1%</b>			
<b>CONSTRUCTION/DEMOLITION</b>				
Treated Lumber	0.1%	0.3%	<0.1%	0.4%
Untreated Lumber	<0.1%	0.0%	<0.1%	<0.1%
Concrete/Brick/Asphalt	<0.1%	0.0%	<0.1%	<0.1%
Other	<0.1%	0.0%	<0.1%	<0.1%
<b>Total C&amp;D</b>	<b>0.1%</b>			

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

EXHIBIT 4-7 (continued)  
SUMMARY OF MIXED LOADS COMPOSITION  
DUPAGE COUNTY

WASTE COMPONENT	Mean	Standard Deviation	Lower Confidence Limit	Upper Confidence Limit
<b>METAL</b>				
Aluminum Cans	1.1%	1.3%	0.2%	2.1%
Bi-Metal Cans	<0.1%	0.1%	<0.1%	0.1%
Tin Cans	1.7%	1.8%	0.3%	3.0%
Foil	0.3%	0.2%	<0.1%	0.4%
Other Ferrous	3.0%	6.0%	<0.1%	7.4%
Other Non-Ferrous	<0.1%	0.1%	<0.1%	<0.1%
<b>Total Metal</b>	<b>6.1%</b>			
<b>GLASS</b>				
Food/Drink Containers	2.6%	2.4%	0.8%	4.3%
Other Glass	0.2%	0.5%	<0.1%	0.6%
<b>Total Glass</b>	<b>2.8%</b>			
<b>SPECIAL WASTES</b>				
White Goods	<0.1%	0.0%	<0.1%	<0.1%
Tires	<0.1%	0.0%	<0.1%	<0.1%
Used Oil	<0.1%	0.0%	<0.1%	<0.1%
<b>Total Special Waste</b>	<b>&lt;0.1%</b>			
<b>INORGANIC</b>				
	<0.1%	0.0%	<0.1%	<0.1%
<b>HOUSE. HAZARDOUS WASTE</b>				
Empty HHW Containers	<0.1%	0.1%	<0.1%	<0.1%
Dry Cell (alkaline)	<0.1%	0.0%	<0.1%	<0.1%
Dry Cell (non-alkaline)	<0.1%	0.0%	<0.1%	<0.1%
Lead-Acid Batteries	<0.1%	0.0%	<0.1%	<0.1%
Oil-Based Paint	<0.1%	0.0%	<0.1%	<0.1%
Latex Paint	<0.1%	0.0%	<0.1%	<0.1%
Other Flammable	<0.1%	0.0%	<0.1%	<0.1%
Pesticides/Poisons	<0.1%	0.0%	<0.1%	<0.1%
Medical Wastes	<0.1%	0.0%	<0.1%	<0.1%
Fluorescent Tubes	<0.1%	0.2%	<0.1%	0.2%
Oil Filters	<0.1%	0.0%	<0.1%	<0.1%
Other HHW	<0.1%	0.0%	<0.1%	<0.1%
<b>Total HHW</b>	<b>0.1%</b>			
<b>TOTAL</b>	<b>100.0%</b>			

- Note: 1. Composition based on 7 samples from both the Mallard Lake Landfill and the Greene Valley Landfill
2. Confidence Limits are shown at the 95 percent level.

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

**EXHIBIT 4-8  
SUMMARY OF C&D and INDUSTRIAL WASTE RECEIPTS  
MALLARD LAKE LANDFILL**

WASTE COMPONENT	Volume (cy)	Aggregate Composition (by weight)
<b>PAPER</b>		
Newsprint	<1	<0.1%
OCC/Kraft Paper	79	0.4%
Glossy/Magazines	<1	<0.1%
Mixed Paper	<1	<0.1%
Office/Computer Paper	<1	<0.1%
Coated Paper	<1	<0.1%
Wet Strength Carrier Stock	<1	<0.1%
Miscellaneous Paper	49	2.4%
Total Paper	128	2.8%
<b>PLASTIC</b>		
PET (#1) Containers	6	<0.1%
Clear HDPE (#2) Containers	<1	<0.1%
Color HDPE (#2) Containers	26	0.1%
PVC (#3) Containers	<1	<0.1%
LDPE (#4) Containers	<1	<0.1%
PP (#5) Containers	<1	<0.1%
Expanded Polystyrene (#6)	5	<0.1%
Rigid PS (#6) Containers	<1	<0.1%
Other (#7) Containers	<1	<0.1%
Films & Bags	4	<0.1%
Miscellaneous Plastic	11	<0.1%
Total Plastic	51	0.2%
<b>ORGANICS</b>		
Vegetative Food Waste	<1	<0.1%
Other Food Waste	<1	<0.1%
Wood	<1	<0.1%
Textiles/Rubber/Leather	6	0.2%
Disposable Diapers	<1	<0.1%
Miscellaneous Organics	22	1.1%
Total Organics	28	1.3%
<b>YARD WASTE</b>		
Grass/Leaves	<1	<0.1%
Brush/Prunings/Stumps	12	1.3%
Total Yard Waste	12	1.3%
<b>CONSTRUCTION/DEMOLITION</b>		
Treated Lumber	144	4.4%
Untreated Lumber	182	7.4%
Concrete/Brick/Asphalt	133	11.2%
Other	470	70.0%
Total C&D	929	92.9%

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

EXHIBIT 4-8 (continued)  
SUMMARY OF C&D and INDUSTRIAL WASTE RECEIPTS  
MALLARD LAKE LANDFILL

WASTE COMPONENT	Volume (cy)	Aggregate Composition (by weight)
<b>METAL</b>		
Aluminum Cans	<1	<0.1%
Bi-Metal Cans	<1	<0.1%
Tin Cans	<1	<0.1%
Foil	<1	<0.1%
Other Ferrous	20	1.2%
Other Non-Ferrous	4	0.1%
<b>Total Metal</b>	<b>25</b>	<b>1.3%</b>
<b>GLASS</b>		
Food/Drink Containers	<1	<0.1%
Other Glass	4	0.2%
<b>Total Glass</b>	<b>4</b>	<b>0.2%</b>
<b>SPECIAL WASTES</b>		
White Goods	<1	<0.1%
Tires	<1	<0.1%
Used Oil	<1	<0.1%
<b>Total Special Waste</b>	<b>&lt;1</b>	<b>&lt;0.1%</b>
<b>INORGANIC</b>		
	<1	<0.1%
<b>HOUSE. HAZARDOUS WASTE</b>		
Empty HHW Containers	<1	<0.1%
Dry Cell (alkaline)	<1	<0.1%
Dry Cell (non-alkaline)	<1	<0.1%
Lead-Acid Batteries	<1	<0.1%
Oil-Based Paint	<1	<0.1%
Latex Paint	<1	<0.1%
Other Flammable	<1	<0.1%
Pesticides/Poisons	<1	<0.1%
Medical Wastes	<1	<0.1%
Fluorescent Tubes	<1	<0.1%
Oil Filters	<1	<0.1%
Other HHW	<1	<0.1%
<b>Total HHW</b>	<b>&lt;1</b>	<b>&lt;0.1%</b>
<b>TOTAL</b>	<b>1,176</b>	<b>100.0%</b>

Note: Compositional estimates are based on weight. The weight is derived by multiplying the volume for each material by the respective density (pounds per cubic yard).

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

**EXHIBIT 4-9  
SUMMARY OF C&D and INDUSTRIAL WASTE RECEIPTS  
GREENE VALLEY LANDFILL**

WASTE COMPONENT	Volume (cy)	Aggregate Composition (by weight)
<b>PAPER</b>		
Newsprint	<1	<0.1%
OCC/Kraft Paper	367	0.9%
Glossy/Magazines	<1	<0.1%
Mixed Paper	<1	<0.1%
Office/Computer Paper	<1	<0.1%
Coated Paper	<1	<0.1%
Wet Strength Carrier Stock	<1	<0.1%
Miscellaneous Paper	27	0.7%
<b>Total Paper</b>	<b>394</b>	<b>1.6%</b>
<b>PLASTIC</b>		
PET (#1) Containers	<1	<0.1%
Clear HDPE (#2) Containers	<1	<0.1%
Color HDPE (#2) Containers	2	<0.1%
PVC (#3) Containers	<1	<0.1%
LDPE (#4) Containers	<1	<0.1%
PP (#5) Containers	<1	<0.1%
Expanded Polystyrene (#6)	8	<0.1%
Rigid PS (#6) Containers	<1	<0.1%
Other (#7) Containers	<1	<0.1%
Films & Bags	33	<0.1%
Miscellaneous Plastic	3	<0.1%
<b>Total Plastic</b>	<b>44</b>	<b>&lt;0.1%</b>
<b>ORGANICS</b>		
Vegetative Food Waste	<1	<0.1%
Other Food Waste	<1	<0.1%
Wood	<1	<0.1%
Textiles/Rubber/Leather	50	0.6%
Disposable Diapers	<1	<0.1%
Miscellaneous Organics	<1	<0.1%
<b>Total Organics</b>	<b>50</b>	<b>0.6%</b>
<b>YARD WASTE</b>		
Grass/Leaves	41	<0.1%
Brush/Prunings/Stumps	58	3.1%
<b>Total Yard Waste</b>	<b>99</b>	<b>3.1%</b>
<b>CONSTRUCTION/DEMOLITION</b>		
Treated Lumber	114	1.7%
Untreated Lumber	236	4.7%
Concrete/Brick/Asphalt	291	9.5%
Other	707	77.8%
<b>Total C&amp;D</b>	<b>1,349</b>	<b>93.7%</b>

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

EXHIBIT 4-9 (continued)  
SUMMARY OF C&D and INDUSTRIAL WASTE RECEIPTS  
GREENE VALLEY LANDFILL

WASTE COMPONENT	Volume (cy)	Aggregate Composition (by weight)
<b>METAL</b>		
Aluminum Cans	<1	<0.1%
Bi-Metal Cans	<1	<0.1%
Tin Cans	<1	<0.1%
Foil	<1	<0.1%
Other Ferrous	31	0.9%
Other Non-Ferrous	4	<0.1%
Total Metal	34	0.9%
<b>GLASS</b>		
Food/Drink Containers	<1	<0.1%
Other Glass	2	<0.1%
Total Glass	2	<0.1%
<b>SPECIAL WASTES</b>		
White Goods	<1	<0.1%
Tires	<1	<0.1%
Used Oil	<1	<0.1%
Total Special Waste	<1	<0.1%
<b>INORGANIC</b>		
	<1	<0.1%
<b>HOUSE. HAZARDOUS WASTE</b>		
Empty HHW Containers	<1	<0.1%
Dry Cell (alkaline)	<1	<0.1%
Dry Cell (non-alkaline)	<1	<0.1%
Lead-Acid Batteries	<1	<0.1%
Oil-Based Paint	<1	<0.1%
Latex Paint	<1	<0.1%
Other Flammable	<1	<0.1%
Pesticides/Poisons	<1	<0.1%
Medical Wastes	<1	<0.1%
Fluorescent Tubes	<1	<0.1%
Oil Filters	<1	<0.1%
Other HHW	<1	<0.1%
Total HHW	<1	<0.1%
<b>TOTAL</b>	<b>1,972</b>	<b>100.0%</b>

Note: Compositional estimates are based on weight. The weight is derived by multiplying the volume for each material by the respective density (pounds per cubic yard).

Source: Waste Stream Characterization for DuPage County, Illinois, February 17, 1995

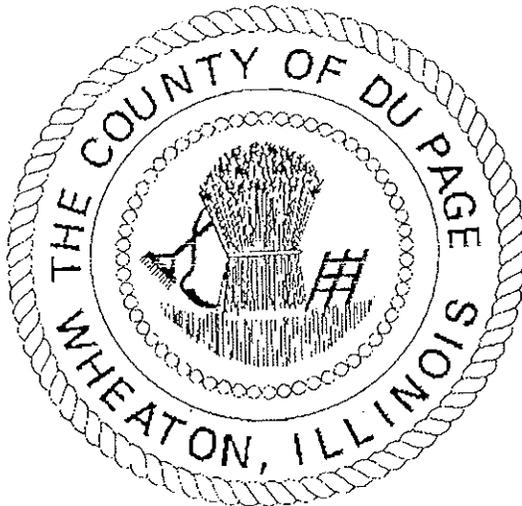
---

**APPENDIX 8-E**

**DUPAGE COUNTY SWMP  
2001 UPDATE**

---

DuPage County, Illinois  
Solid Waste Management Plan  
2001



## PREFACE

The Illinois Solid Waste Planning and Recycling Act (415 ILCS 15.1 et seq.) provides DuPage County with the primary responsibility to plan for the management of municipal waste within its boundaries, identify waste reduction and recycling operations as preferable to land disposal, and requires counties to develop and implement plans with a time line based on the county's population. The law further requires county solid waste plans to provide for 15 % waste reduction by the third year and 25 % waste reduction by the fifth year. Counties are required to implement their solid waste management plan and can enlist the help of municipalities and private entities in its implementation.

The first comprehensive Solid Waste Management Plan for DuPage County was developed in 1990 and was approved in February 1991. The State of Illinois requires that the Solid Waste Management Plan be updated every five years (415 ILCS 10/5 (e)). The first five-year update to the plan was approved in November 1996. This document is the second five-year update to the plan. The DuPage County Solid Waste Division prepared this document.

**2001**  
**DuPage County Solid Waste Committee Members**

DuPage County Board Members

Kyle Gilgis, Chairman	District 3
Roger Jenisch	District 1
Irene Stone	District 2
Paul Didzerekis	District 4
Alice Peterson	District 5
Roger Kotecki	District 6

Municipal Members

Douglas Krause, Vice-Chairman	District 5
Ronald Putzell	District 1
Daniel J. Kordik	District 2
James A. Addington	District 3
James Perlstein	District 4
John J. Bajor, Jr.	District 6

## 1.0 Waste Generation

According to the 2000 Census, there are 904,161 persons living in DuPage County. The Illinois EPA has estimated that Illinoisans generated waste at a rate of 6.9 pounds per person per day in 1999 (1), or 1.26 tons waste/per person, per year. This estimate includes non-hazardous residential and commercial waste sources. Utilizing these figures, the volume of waste generated is determined below:

Population of DuPage County in 2000 = 904,161 persons

904,161	2000 Population of DuPage County (2000 U. S. Census)
x 1.26	Tons Waste/Person/Year
<u>1,139,000</u>	Tons Waste/Year Generated

The county wide total diversion and recycling rate is currently about 35% for residential waste sources based on reported data for 2000. Therefore, assuming 65% of waste is currently being disposed of in landfills. The remaining waste for disposal is calculated as follows:

1,139,000	Tons Waste Generated
x 65 %	Percent Remaining after Recycling
<u>740,000</u>	Tons Landfilled/Year

## 2.0 Transfer Station Capacity

Estimated 5-Year Budget \$500,000  
Estimated FTE: 0.1

The DuKane Transfer Facility, privately owned and operated by Groot Industries, is the only facility in the county that accepts solid waste for transfer to landfills outside DuPage County. This facility is currently permitted to accept a maximum of 1,950 tons of waste per day with an annual average amount not to exceed 1,500 tons per day. Approximately 50 percent of the waste generated by the service area for the DuKane Transfer Facility originates from DuPage County (2).

As currently permitted, the DuKane Transfer Facility may accept 468,000 tons/per year. The estimated amount of waste generated in DuPage County and accepted at the DuKane Transfer Facility is approximately 50% or 234,000 tons/per year. Thus, the following represents the amount of waste generated in DuPage County that is not recycled or being handled by the DuKane Transfer Facility:

740,000	Tons Landfilled/Year
- 234,000	Tons Processed at DuKane
<u>506,000</u>	Tons of Waste not using local transfer station

It is recommended that the permitted capacity of the DuKane Transfer Facility be increased from 1,500 tons per day to 2,500 tons per day (a 66.7 % increase) with a proportionate increase in acceptance at the facility of waste generated in DuPage County. The remaining need for an additional one or two transfer facilities would be as follows:

506,000	Tons Waste not using local transfer station
- 156,000	Tons Waste/Year for DuKane expansion
350,000	Tons Waste/Year remain for addition transfer facility

DuPage County has not received information regarding the amount of waste generated in DuPage County that is transferred out of the Onyx operated Melrose Park Transfer Station.

The second and/or third transfer station(s) should be sized to accommodate the 350,000 tons waste/year and accommodate future population growth and subsequent waste generation. A second and/or third transfer station is expected to increase competition, reduce wear on roads, reduce overall truck miles traveled and decrease truck air emissions.

It should be noted that Groot Industries has applied to the City of West Chicago for a special use permit for a 150 ton per day singlestream recycling facility at 1655 Powis Road (3). The service area for the proposed facility was not defined. However this facility, if approved and constructed, could provide additional processing of recyclables from generators in DuPage County reducing the need for solid waste transfer station capacity in the county.

Additionally, recycling of construction & demolition debris or other material may also reduce the transfer capacity needed at future transfer facilities.

## 2.1 Generic Host Community Benefit Agreement for Municipalities

The County shall encourage municipalities to develop, approve and enact a generic host community benefit agreement for new pollution control facilities subject to local siting approval pursuant to 415 ILCS 5/39.2. The generic host community benefit agreement shall apply to all new pollution control facilities or specific types such as only waste transfer facilities. The generic host community benefit agreement shall include monetary compensation or other requirements to protect residents and the environment.

The County shall encourage municipalities to include provisions in the host community benefit agreements that would provide funds to assist the County in implementing the DuPage County Solid Waste Management Plan and subsequent amendments. The funds would be used to share in the cost of implementing household hazardous waste collections; hazardous educational waste collections; tire, electronic and other specialty collections; solid waste enforcement; educational and other activities as contained in the Plan.

## 2.2 Waste and Recycling Agreement Funding for Municipalities

The County shall encourage municipalities to include provisions in future waste and recycling hauling agreements to provide funds to assist the County in implementing the DuPage County Solid Waste Management Plan and subsequent amendments. The funds would be used to share in the cost of implementing household hazardous waste collections; hazardous educational waste collections; tire, electronic and other specialty collections; solid waste enforcement; educational and other activities as contained in the Plan.

## 2.3 Generic Host Community Benefit Agreement for DuPage County

The County shall develop, approve and enact a generic host community benefit agreement for new pollution control facilities subject to local siting approval pursuant to 415 ILCS 5/39.2. The generic host community benefit agreement may apply to all new pollution control facilities or specific types such as only waste transfer facilities. The generic host community benefit agreement may include monetary compensation to the County or other requirements to protect residents and the environment.

Use of funds received by the County pursuant to any generic host community benefit agreement shall be prioritized and first used to implement any and all provisions of the County's Solid Waste Management Plan and subsequent amendments as needed. The funds would be used to share in the cost of implementing household hazardous waste collections; hazardous educational waste collections; tire, electronic and other specialty collections; solid waste enforcement; educational and other activities as contained in the Plan.

## 3.0 Household Hazardous Waste

Estimated 5-Year Budget \$2.3 million  
Estimated FTE: 0.25

The County should continue to plan collection events for household hazardous waste. The residential portion of the household hazardous waste program currently consists of a permanent collection facility located in Naperville, Illinois and the County's one-day collection program. The funding agreement between Naperville and DuPage County expires September 2003. Forty-three one-day mobile collections have been held throughout the County since 1996 and have collected approximately 354,312 gallons of hazardous waste.

## 4.0 Environmental Education

Estimated 5-Year Budget \$1,500,000  
Estimated FTE: 0.50

The County should continue to plan for environmental education activities including waste reduction, reuse, and recycling. An emphasis should be placed on the most cost-effective approaches such as teacher training. Tours and educational materials regarding transfer stations could be included as needed.

## **5.0 Computers and Electronics Recycling Events**

**Estimated 5-Year Budget \$500,000**  
**Estimated FTE: 0.10**

The first one-day collection event held in fiscal year 2001 brought in over 40,000 pounds of computer and electronics material. With an ever-increasing amount of older and obsolete computer and electronic equipment entering the waste stream due to rapid advancements in technology, the county should plan to continue and expand providing a recycling outlet for this part of the waste stream.

## **6.0 Latex Paint Recycling Program**

**Estimated 5-Year Budget \$500,000**  
**Estimated FTE: 1.4**

The County should plan to continue to work in cooperation with the State to collect residential latex paint and gradually increase collection efforts. To sustain a successful program, the County should also plan to continue to actively market and locate a multitude of outlets for reusing the recycled paint.

## **7.0 Recycling Guide**

**Estimated 5-Year Budget \$500,000**  
**Estimated FTE: 0.50**

The Recycling Guide is a publication that continues to educate the public about various ways to manage their waste through reducing, reusing, recycling and proper disposal. The County should plan to continue to provide a paper copy of this publication every other year to all residential addresses in the county and update the Website version annually.

## **8.0 Enforcement Activities**

**Estimated 5-Year Budget \$500,000**  
**Estimated FTE: 1.0**

The DuPage County Solid Waste Division currently has an agreement with the Illinois Environmental Protection Agency (Illinois EPA) to conduct non-hazardous waste inspections for the Bureau of Land. The agreement continues through June 30, 2005. The County should plan to continue applying for and maintaining grant funding and delegated authority agreements for this program.

The Division, on average, has conducted more than 130 inspections per year over the last five years at Illinois EPA permitted facilities and illegal dumps throughout the County. The Division anticipates partial grant funding from the Agency for the program.

**9.0 Investigate New Areas of Need for Waste Reduction or Recycling**

**Estimated 5-Year Budget \$250,000  
Estimated FTE: 0.25**

The County should plan to investigate the potential need for new areas of waste reduction or recycling. One such area of need may be construction and demolition debris recycling.

**10.0 Investigate Options for More Efficient, Cost Effective Methods to Collect and Manage Waste and Recyclables**

**Estimated 5-Year Budget \$200,000  
Estimated FTE: 0.15**

The County should plan to assist units of local government by investigating potential options for reducing the cost of collection, processing, and disposal of residential and commercial solid waste, recyclables, landscape waste, and household hazardous waste in the unincorporated areas of the County. Methods for improving recyclability of materials may be investigated. Effectiveness of drop-off locations may be examined. Alternative proposals could be evaluated and compared to current costs. More cost-effective service could be implemented if appropriate subject to financial limitations and constraints by DuPage County Board rules.

**11.1 Product Procurement Policy**

**Estimated 5-Year Budget \$100,000  
Estimated FTE: 0.10**

The County should plan to develop a model product procurement policy and corresponding procedures for increasing the procurement of recycled-content and other environmentally preferable products for use by the County and its consultants and contractors as well as other local government entities. This model policy should plan to adhere to waste prevention practices such as purchasing products that are durable, reusable, recyclable, made from post-consumer material, with minimal packaging and toxicity, and efficient use of energy resources whenever cost effective and to the extent practicable.

**11.2 Packaging Reduction**

**Estimated 5-Year Budget \$50,000  
Estimated FTE: 0.20**

The County should plan to discuss with manufacturers potential options to reduce excessive product packaging and reduce toxicity of materials and products.

**12.0 Local Grants and Assistance**

**Estimated 5-Year Budget \$100,000  
Estimated FTE: 0.15**

The County should plan to offer grants and assistance to communities and local service groups in the county for waste reduction and recycling activities subject to DuPage County Board rules.

**13.0 Hazardous Educational Waste**

**Estimated 5-Year Budget \$100,000  
Estimated FTE: 0.10**

In the fall of 1999 and spring of 2000, DuPage County held a program to collect hazardous education waste from schools in the County. The collections were held in conjunction with the mobile household hazardous waste collection events. Schools were required to inventory their wastes prior to acceptance at the event. The opportunity was available to all public and private schools in DuPage County.

The DuPage County Regional Office of Education assisted in promoting the event and teaching the techniques of microscale chemistry. A total of forty-eight schools participated during the length of the program. The intent of the program is to perform additional collections of hazardous curriculum-based wastes from schools emphasizing microscale chemistry teaching methods to reduce the amount of hazardous waste generated by schools in the future.

**14.0 Waste Reduction**

**Estimated 5-Year Budget \$100,000  
Estimated FTE: 0.10**

The County will continue to host specialty waste reduction events to reduce the amount of waste going to the landfills. Recycling will be encouraged and publications will include information on reducing the amount of waste a household generates. The County should plan to educate the public as to the availability and benefits of recycled-content products and materials to encourage their purchase thereby 'closing the loop' on recycling.

**15.0 Recycling Events for Other Nuisance Materials**

**Estimated 5-Year Budget \$100,000  
Estimated FTE: 0.10**

The County should plan to continue and expand providing collection of illegally dumped or troublesome materials such as tires, construction and demolition waste, scrap metals and automotive parts and fluids. The County should plan to provide multi-material collection events and co-sponsor events with state agencies.

## **16.0 Reporting, Brochures, and Other Informational Media**

The following sections include estimated costs for labor, materials, computer layout and printing costs. An estimate of the full-time staff labor equivalency is included after the budget estimate for each item.

### **16.1 Public Informational Brochures**      **Estimated 5-Year Budget \$70,000** **Estimated FTE: 0.10**

The County plan to continue to promote waste reduction efforts in the form of source reduction, reuse, recycling, and procurement strategies by developing and distributing informational brochures such as the Recycling Guide, Paint Management, Household Hazardous Waste, and Safer Household Cleaners brochures, to government entities and the general public.

### **16.2 Maintain Website**      **Estimated 5-Year Budget \$70,000** **Estimated FTE: 0.10**

The County should plan to continue to provide new and updated solid waste management information on the Solid Waste Division's Internet Website to help disseminate information to the general public. The very popular Recycling Guide is maintained on the Website.

### **16.3 Waste Management Reports**      **Estimated 5-Year Budget \$50,000** **Estimated FTE: 0.10**

The County should plan to continue to develop and distribute reports mandated or required by federal, state, and local government entities including the Annual Report which documents recycling levels of the County's waste stream, solid waste management programs, and municipal solid waste collection services.

#### References:

- (1) Nonhazardous Solid Waste Management and Landfill Capacity in Illinois -- 1999 Annual Report, Illinois Environmental Protection Agency, January 2001
- (2) Application for Local Siting Authority for the DuKané Transfer Facility, prepared by Engineering Solutions for Browning-Ferris Industries of Illinois, Inc., Volume 1, Page 19, May 1997
- (3) Request for Special Use Permit and Text Amendment, Groot Industries, Inc., August 2001

		<b>SUMMARY</b>	
		<u>5-Year Budget</u>	<u>FTE</u>
2.0	Transfer Station Capacity	\$500,000	0.1
3.0	Household Hazardous Waste	\$2,300,000	0.25
4.0	Environmental Education	\$1,500,000	0.5
5.0	Computers and Electronics Recycling Events	\$500,000	0.1
6.0	Latex Paint Recycling Program	\$500,000	1.4
7.0	Recycling Guide	\$500,000	0.5
8.0	Enforcement Activities	\$500,000	1.0
9.0	Investigate New Areas of Need for Waste Reduction or Recycling	\$250,000	0.25
10.0	Investigate Options for Cost Effective Methods to Manage Waste/Recyclables	\$200,000	0.15
11.1	Product Procurement Policy	\$100,000	0.1
11.2	Packaging Reduction	\$50,000	0.2
12.0	Local Grants and Assistance	\$100,000	0.15
13.0	Hazardous Educational Waste	\$100,000	0.1
14.0	Waste Reduction	\$100,000	0.1
15.0	Recycling Events for Other Nuisance Materials	\$100,000	0.1
16.1	Public Information Brochures	\$70,000	0.1
16.2	Maintain Website	\$70,000	0.1
16.3	Waste Management Reports	\$50,000	0.1
<b>TOTAL</b>		<b>\$7,490,000</b>	<b>5.3</b>
<b>Current Fund Balance</b>		<b>\$6,700,355</b>	
<b>Future Revenue</b>			
	Land Sale	\$1,700,000	
	Interest	\$750,000	
	Transfer Station	\$500,000	
<b>TOTAL AVAILABLE FUNDS</b>		<b>\$9,650,355</b>	
Potential IEPA Inspection Grant (5 Yr.)		\$240,000	
<b>TOTAL</b>		<b>\$9,890,355</b>	



---

**APPENDIX 8-F**

**DUPAGE COUNTY SWMP  
2007 UPDATE**

---

# **DU PAGE COUNTY, ILLINOIS**



# **FIVE YEAR UPDATE SOLID WASTE MANAGEMENT PLAN 2007**

February 1991, Adopted DuPage County Solid Waste Management Plan  
June 1996, Adopted the first Solid Waste Plan Five Year Update  
April 2002, Adopted the second Solid Waste Management Plan 2001

Approved by: DuPage Environmental Committee on February 12, 2008  
Approved by: DuPage County Board on February 26, 2008

Prepared by: DuPage County Department of Economic Development and Planning  
421 North County Farm Rd.  
Wheaton, IL 60187

Assisted by: Shaw Environmental, Inc.  
1607 E. Main St.  
St. Charles, IL 60174

Robert J. Schillerstrom, County Board Chairman

DuPage County Environmental Committee

Jeff Redick – Chairman (District 2)  
Yolanda Campuzano – Vice Chairman (District 1)  
James D. Healy (District 5)  
Linda A. Kurzawa (District 6)  
Michael F. McMahon (District 3)  
Debra Olson (District 4)



DuPage County Department of Economic Development and Planning  
Tom Cuculich, Director

Office Hours

8 a.m. – 4:30 p.m.  
Monday – Friday

Jack T. Knuepfer Administration Building  
421 North County Farm Road  
Wheaton, IL 60187

Phone: (630) 407-6700  
Fax: (630) 407-6702  
[www.dupageco.org/edp](http://www.dupageco.org/edp)

## **INTRODUCTION**

The 2007 Solid Waste Management Plan Update goals are to review the current status of solid waste management activities within the County and set the priorities for the next five years.

The DuPage County Solid Waste Management Plan (the “Plan”) was first adopted in 1991 to comply with the Solid Waste Planning and Recycling Act (“Act”). As mandated by the State, subsequent five-year updates were done and were approved by the County Board. The intent of the Act is for counties to continually evaluate waste generation, capacity, technology and other solid waste components.

This Plan update has been drafted to comply with the Act. It serves to provide direction to the County and evaluate the status of waste disposal capacity. The status of waste management in the County has changed drastically since the first Plan was adopted. All landfills have closed and transfer stations have become the preferred method of disposal. This not only affects waste capacity, but the revenue to accomplish the goals set forth in the original Solid Waste Plan.

As for the County’s role in determining the future of waste handling facilities, the {Illinois} Environmental Protection Act provides authority to the county board of the county or the governing body of the municipality to approve or disapprove a request for local siting approval for each pollution control facility which is subject to such review. An applicant for local siting approval shall submit sufficient details describing the proposed facility to demonstrate compliance, and local siting approval shall be granted only if the proposed facility meets nine criteria. The governing body must decide if the pollution control facility is needed to meet the waste generation needs of the area and they must decide if the facility that is proposed is consistent with the County’s Solid Waste Plan.

## **BACKGROUND**

### *WASTE GENERATION*

Previous solid waste plans have included a waste generation rate (pounds per capita per day). Periodically the rate must be evaluated and compared to the region’s disposal trends. For this document, DuPage County worked with Shaw Environmental, Inc. to develop a more accurate reporting method. The methodology employed utilized recent landfill disposal data including Cook, Will Lake, Grundy, Lee, Livingston, Ogle, and Kane counties in Illinois, and multiple sites in Michigan, Wisconsin and Indiana. Forty-six landfills were identified as having accepted waste from the Chicago metropolitan region during the period between 1996 and 2006. The evaluation found that in general, waste disposal within the metropolitan region has been consistently increasing.

The result was that in 2006, waste is estimated to be disposed at a rate of 7.5 pounds per capita per day (pcd). This is an increase from the rate of 6.9 pcd that was reported in 2001.

The 2006 population of DuPage County was estimated to be 932,670. When multiplied by the waste generation rate listed above, the County is currently disposing of 6,995,025 pounds of waste per day, or 3,498 tons of waste per day for a total of 1,276,592 tons per year. Considering the recycling rate of 31%, the County is landfilling 893,614 tons of waste each year.

#### *WASTE DISPOSAL*

DuPage County is currently home to one municipal solid waste transfer station<sup>(1)</sup>, one landscape waste transfer station and three construction and demolition debris recycling facilities. All waste intended for landfilling or incineration is shipped out of the County.

The 2001 Plan Update concluded that an additional one or 2 more transfer stations were necessary assuming that 50% of the capacity at the DuKane Transfer Station was for DuPage County waste. It also recommended that the capacity of the DuKane facility be increased.

In 2002, DuKane's capacity was increased to 3,000 tons per day. Three new transfer stations have been proposed since the last update, however, none were approved. Transfer facilities have been constructed outside the County border that are close enough to serve our needs.

To provide an accurate snapshot of the current waste disposal capacity, an evaluation was done of existing transfer stations and disposal facilities (Attachment A). The County was divided into quadrants and the consultant reviewed the nearest three transfer stations to each quadrant. The ideal transport distance is no more than 10 miles. Out of the ten stations that were analyzed, only two facilities serving southern DuPage County failed to meet this criterion (Attachment B).

The trend in the Chicagoland area has been to utilize transfer stations because viable landfills are closing. The waste must be moved farther distances to landfills located in more rural areas, contributing to higher waste disposal/hauling costs. To determine the extent of this trend, a comparison of the disposal fees of municipalities was completed. It found that on average rates had increased 37.5% since 1995.

#### *RECYCLING*

One of the opportunities to reduce disposal costs is to increase recycling. As identified in the Solid Waste and Recycling 2006 Report, DuPage County has achieved a residential recycling rate of 37% and a commercial recycling rate of 22%, making the overall recycling rate 31%. This is well above the State mandated 25%. The County has been successful in maintaining a high residential recycling rate, however, there is room for improvement in commercial recycling.

<sup>(1)</sup> *A transfer station is a materials consolidation facility in which loads from several collection vehicles are combined into a single transfer trailer (or rail car or barge) for long haul to a landfill or other permanent disposal site.*

**CHANGES AND DEVELOPMENTS 1991 to 2007**

DuPage County is home to 39 municipalities (wholly and partially) and as of 2006 approximately 932,670 residents. It is 332 square miles and as of 2004, there were 32,908 business establishments and 337,454 households.

At the adoption of the 1991 Plan, DuPage County's population was 813,806 and there were 169,040 single-family homes and 83,010 multi-family households. There were two operating sanitary landfills which had 6,861,362 cubic yards of capacity. Today there are no operating landfills, and due to the setback and expansive space requirements, siting a new landfill is nearly impossible.

**FIVE YEAR DISPOSAL**

Attachment A indicates that the northwestern portion of the County is being served by one in-county transfer station and three outside the county line. The northeastern portion is being and/or could be served by three transfer stations. The analysis concluded that the only areas that might benefit from a waste transfer station are located in the southern portion of the County. The distances exceed the ideal maximum of 10 miles, however, it appears that current disposal costs are at a level that satisfies supply and demand.

Regardless of this analysis, setback requirements and space limitations continue to challenge the private sector in locating new pollution control facilities. An additional hurdle is the current sentiment of local governments which makes the possibility of siting any additional waste transfer stations in DuPage County highly unlikely.

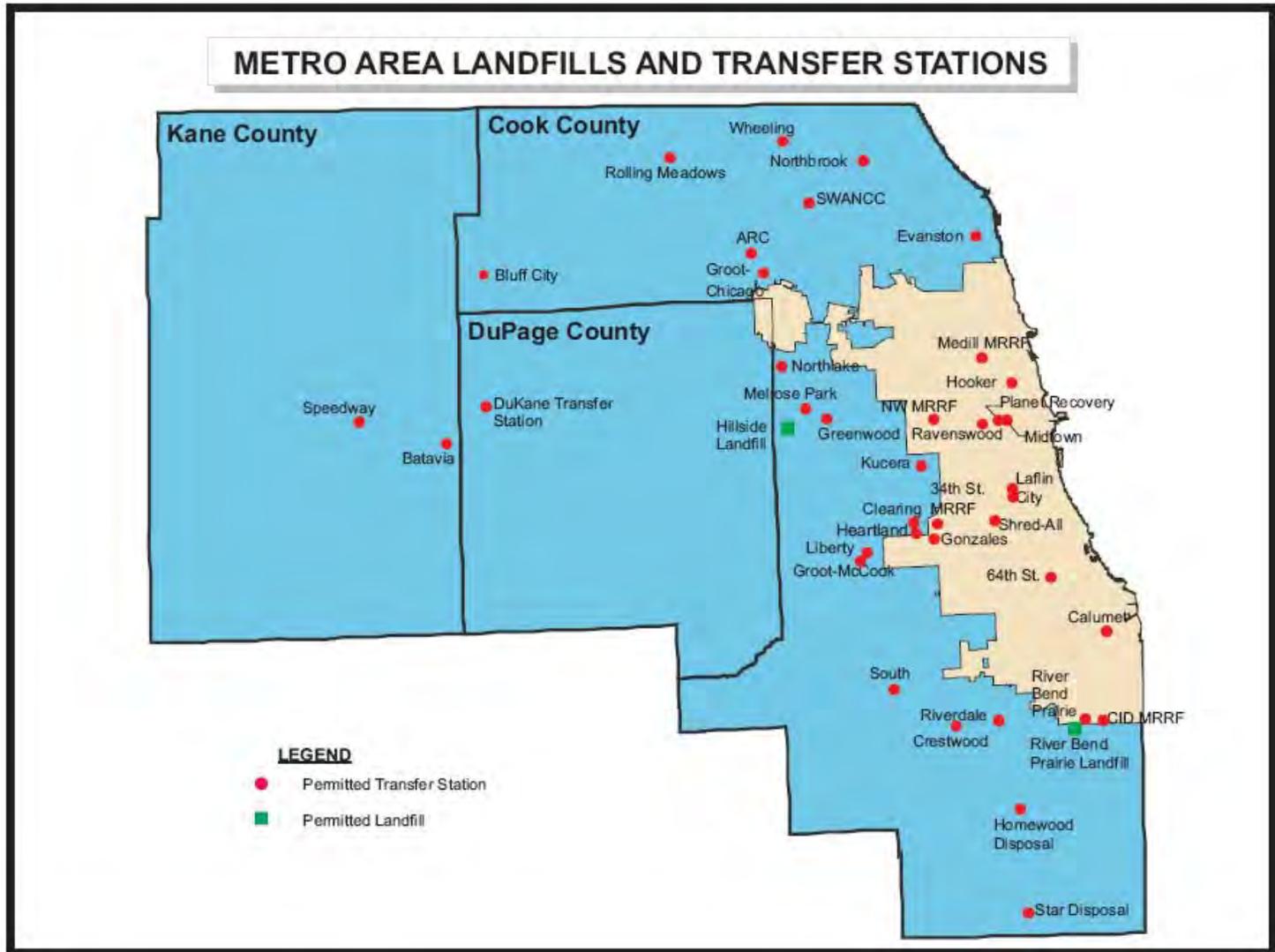
The position at this time is to rely on existing stations both inside and outside of the County borders. While this reliance comes at the cost of higher disposal rates, it is the preferred method. This method will serve the County's needs for the next 5 years.

Attachment C lists the recommendations of the original Solid Waste Plan and subsequent updates. It provides a review of those recommendations including status of implementation and any future plans.

\*\*\*\*\*

ATTACHMENT A

SHAW ENVIRONMENTAL, INC.



## ATTACHMENT B

### SHAW ENVIRONMENTAL, INC.

TABLE 1. DISTANCES TO NEAREST TRANSFER STATIONS, BY QUADRANT			
	One-Way Travel		Average Travel Speed (mph)
	Miles	Minutes	
<b>Northwest DuPage County</b>			
DuKane Transfer	4.7	8	35
Batavia Transfer	8.8	18	29
Bluff City Transfer	12.0	22	33
Average	8.4	16	32
<b>Northeast DuPage County</b>			
Northlake Transfer	5.6	13	28
Melrose Park Transfer	6.8	12	34
Groot-Chicago Transfer	8.9	17	31
Average	7.1	14	30
<b>Southwest DuPage County</b>			
Batavia Transfer	10.3	23	27
DuKane Transfer	12.6	22	34
Speedway Transfer	18.8	36	31
Average	13.9	27	31
<b>Southeast DuPage County</b>			
Groot-McCook Transfer	8.8	22	24
Liberty Transfer	9.7	25	23
Heartland Transfer	13.1	22	38
Average	10.5	23	28

The areas served by each of these facilities are indicated on the figures contained in Attachment 2. Service areas were obtained from applications for local siting approval, where available. For all other facilities, a service area consisting of a 10-mile radius around the facility was assumed, based on the distance that waste may be economically transported in areas of higher population density.

**ATTACHMENT C**  
**1996 TO 2007 ACCOMPLISHMENTS AND RECOMMENDATIONS**

<i>1990 Solid Waste Plan and 1996 Update Recommendations</i>	<i>Status</i>	<i>Future</i>
The County will focus on sustaining intergovernmental cooperation with local government agencies authorized by status to perform solid waste management activities, including but not limited to counties, municipalities, townships, special taxing districts, and joint action agencies.	Implemented/ongoing	Through standing and future relationships, the County should continue to remain as an informational clearinghouse for other entities and provide whatever support is necessary to accomplish solid waste and recycling obligations.
The County will continue to monitor and develop legislation as necessary to assist in the development and implementation of sound solid waste management programs.	Implemented/ongoing.	As potential problems or existing problems arise that are in need of legislative modifications, the County will draft the necessary language.
The County should encourage local industry to streamline the product design, manufacturing, and packaging processes they utilize by offering general information and technical assistance regarding source reduction practices.	Implemented/ongoing.	This is done on a limited basis through the County's community outreach portion of the contract with SCARCE. Continue program as is.
The County must promote waste prevention.	Implemented/ongoing.	Promoted through education contract and information on the website. Continue to promote waste reduction through outlets and by becoming an example.
As part of the County's waste reduction program, pollution abatement should be aimed at minimizing the negative impact of potentially hazardous refuse on the environment.	Implemented/ongoing	The County hosts one-day HHW events and monetarily supports the regional HHW facility in Naperville.
The County should make an effort to reduce the total amount of waste it generates and should minimize the use of highly toxic or disposable products whenever possible.	Implemented/ongoing	The County has jointed Clean Air Counts and committed to reduce toxics generated. It participates in many special and hazardous waste recycling and proper disposal programs. It utilizes low or non toxic cleaners.
Continue to provide assistance to the existing drop-off center facilities.	Implemented	The County purchased the IPF where recycling drop off is available 7 days a week. Even after the sale of the property, the

		purchaser continues this program.
Pursue the implementation of curbside collection services to additional households within DuPage County.	Implemented.	All municipalities provide curbside recycling service. Haulers offer recycling in unincorporated areas on a limited basis.
Encourage drop-off facilities single-family, and multi-family collection services to accept and market the maximum range of recyclable materials.	Implemented/ongoing	Drop off facilities accept a range of materials for recycling. Provides the Recycling Guide which lists companies that accept hard-to-handle items.
Encourage the implementation of residential collection programs which are designed for the convenience of the resident.	Implemented/ongoing	All DuPage municipalities provide curbside recycling. In addition, there are several drop off centers for use.
Facilitate the development and expansion of recycling services for multi-family housing complexes.	Implemented/ongoing.	The County provided a sample multi-family recycling ordinance for municipalities. Drop off sites are listed on the website.
Document the recycling levels of the residential waste stream.	Implemented/ongoing.	The County calculates the recycling rate annually with rates consistently exceeding the State mandated 25%.
Research the feasibility of coordinating the implementation of volume-based solid waste collection systems for all residents in the County.	Not pursued.	At this time, State regulations do not permit county-wide waste collection.
Develop a county-wide public awareness and information program utilizing outlets for such distribution of information.	Implemented/ongoing.	EDP maintains a website, distributes brochures including the Recycling Guide, Green Building brochure and Safer Household Cleaner Alternatives.
Resume printing of a Solid Waste Newsletter on a regular basis and distribute to individuals on an existing and an expanding list at the County.	Implemented/ongoing.	Due to technological advancements, the website is a more reliable and up-to-date tool for disseminating information.
Provide mass appeal informational material.	Implemented/ongoing	The County continues to develop new information that is distributed and posted on the website.
Provide a clearinghouse capability for information requests.	Implemented/ongoing	EDP call center, pamphlets and the website all provide information to the public.
Continue regular intergovernmental network meetings but strive	Implemented	The Solid Waste Committee was dissolved in

for format which encourages local reports and attendance by elected officials.		2003 due to a diminished need for its existence. The majority of the work had been completed and the municipalities had taken on recycling responsibilities.
Continue general meetings with public as requested.	Implemented/ongoing.	Continue to hold Environmental Committee meetings to address these items.
Develop and implement information programs for schools	Implemented/ongoing.	S.C.A.R.C.E. has been contracted through 2008 to provide education to teachers and community groups.
Develop and expand working relationships with grass roots and special interest organizations as well as trade groups.	Implemented/ongoing	S.C.A.R.C.E. has been contracted through 2008 to provide information to community groups and businesses as necessary. The DuPage Environmental Commission meets monthly on a range of environmental topics and hosts an annual environmental summit.
Investigate and utilize resources available through public service/community access media outlets.	Implemented.	Addressed under several other recommendations.
Initiate promotional activities.	Implemented.	The County recognizes successful and innovative programs and through S.C.A.R.C.E. presents Earth Flags to schools.
Solicit regional and national coverage by preparation of articles for journals and presentations of papers at conferences.	Implemented.	Due to financial restrictions, this will be done on a limited basis.
Develop mass media programs.	Implemented/ongoing	On a program basis, advertising will continue to be pursued through newspapers, websites, press releases and brochures.
Pursue additional funding resources.	Implemented/ongoing	The County has received grant funding in the past and will consistently look into alternate funding sources.
Strongly encourage private business to actively pursue recycling and waste reduction practices, as well as to procure secondary materials.	Implemented/ongoing	The County continues to provide the Recycling Guide which provides recycling outlets to all entities. S.C.A.R.C.E. provides

		education on recycling, energy efficiency, waste audits and other green recommendations to businesses.
Expand the commercial/institutional/industrial outreach program.	Implemented.	Due to staffing levels, this program will not be maintained on a full scale. Educational information will be posted on the website periodically. The WeReduce program educated an array of entities.
Document the recycling levels from the commercial/institutional/industrial waste stream.	Implemented/ongoing.	Each year, staff expands its request for recycling information. Unfortunately, due to its voluntary nature and privacy issues, this will receive minimal time.
Encourage the siting and development of the industries that use secondary materials in DuPage County area.	Implemented.	The County annually supports entities applying to DECO for recycling grants.
Develop guidelines for the County's procurement of recycled products.	Pursuing	The County is currently working on a Conservation Policy that will incorporate purchasing practices. It is expected to be introduced in early 2008.
The County should itself practice and assist other local governments including the Forest Preserve District in the design and implementation of in-house recycling, waste reduction, and procurement programs.	Implemented.	The County is currently working on a Conservation Policy that will incorporate purchasing practices. The environmental educator also provides assistance.
Document the recycling levels from the public sector's waste stream.	Implemented/ongoing	The County calculates the recycling rate annually with rates consistently exceeding the State mandated 25%.
Establish a new target recycling goal of beyond 25% after 1996.	Implemented/ongoing	Through the implementation of many of the County's programs, significant efforts have been made to increase the recycling rate. The County has consistently exceeded 25% without mandating a target.
Goals for the reduction in this component (construction and demolition debris) of the waste stream should be parallel with other County recycling goals. The County should encourage steps	Implemented	The County assisted in the development and distribution of the Illinois Construction and Demolition Site Recycling Guidebook in

leading towards a minimum reduction in this waste component of 25 percent in three years and 50 percent within five years.		1997. An update was printed in 2001. A pilot program working with general contractors to recycle was also conducted. Currently outlets are listed on the website and in the Recycling Guide.
The implementation of programs to achieve the goals stated in Recommendation 1 should proceed in a phased manner. The following methods to reduce or recover materials should be considered. They are listed in ascending order of anticipated costs for implementation. (construction and demolition debris)	Implemented	The County assisted in the development and distribution of the Illinois Construction and Demolition Site Recycling Guidebook in 1997. An update was printed in 2001. A pilot program working with general contractors to recycle was also conducted. Outlets are listed on the website and in the Recycling Guide.
The County will focus on reducing the C&D materials that will be leaving DuPage County for disposal once the two DuPage landfills close.	Implemented	The County assisted in the development and distribution of the Illinois Construction and Demolition Site Recycling Guidebook in 1997. An update was printed in 2001. A pilot program working with general contractors to recycle was also conducted. Currently outlets are listed on the website and in the Recycling Guide.
The County should reduce disposal of the C&D waste stream by 50% through reuse and recycling by the year 2000.	Implemented	Unfortunately, the tracking of construction and demolition debris recycling is difficult. There are two recycling facilities operating in the County that divert this waste stream. Proprietary issues limit the amount of information obtained.
In cooperation with the private sector, the County will promote whenever appropriate, legislation to enhance C&D recycling.	Implemented	The County assisted in changing the regulations to allow construction and demolition debris facilities operating in DuPage to be exempt from IEPA permits
The County will promote development of markets to ensure permanent recycling of C&D materials.	Not pursued	The County is working on a Conservation Policy which will encourage the purchase of recycled goods. It is slated to be approved in

		early 2008.
The County will promote waste reduction of C&D materials through a comprehensive educational program.	Implemented	The County created a pilot program to teach waste handlers and construction contractors on how to recycle C&D. There are now 2 recyclers operating in the County.
Provision of equipment and facilities for construction/demolition waste recycling should be sought first from private developers. The implementation of any of the methods discussed in recommendations would logically first be incorporated at the present disposal sites. Other entrepreneurial interests may exist to provide facilities for this action throughout the County.	Not pursued	The County has taken an approach to allow the private sector and the market to drive this economy.
The County will encourage the private sector to voluntarily implement C&D recycling programs and adopt an ordinance if needed.	Implemented	The County created a pilot program to teach waste handlers and construction contractors on how to recycle C&D. There are now 2 recyclers operating in the County.
The County should work in cooperation with the State and the municipalities to intensify public education campaigns which promote landscape waste reduction and backyard composting.	Implemented.	The County utilized the environmental educator to work with composting in addition to distributing a brochure.
The County should develop and implement new innovative public education programs that promote landscape waste reduction and backyard composting.	Implemented	The County utilized the environmental educator to work with composting in addition to distributing a brochure.
The County should monitor the adequacy of available landscape waste disposal capacity and (if required) continue to provide a processing facility for the diverted waste stream.	Implemented/ongoing	As required as part of the Solid Waste Plan Update the County will monitor landscape waste disposal capacity. Establishing new facilities will be left to the private sector. The County no longer is operating a compost site.
To assure maximum compliance with Illinois Public Act 85-1430, the County should continuously monitor and evaluate the efficacy	Implemented/ongoing	The County annually reviews recycling by compiling the Solid Waste and Recycling

of the diversion system.		Annual Report and calculating the recycling rate.
As part of the County's waste reduction program, pollution abatement should be aimed at minimizing the negative impact of potentially hazardous refuse on the environment.	Implemented/ongoing	The County continues to host one-day HHW collection events and has provided monetary assistance to the Regional Household Hazardous Waste Facility. The County also operates a Latex Paint Recycling Program.
Pursue the implementation of an integrated household hazardous waste program.	Implemented/ongoing	The County continues to host one-day HHW collection events and has provided monetary assistance to the Regional Household Hazardous Waste Facility. The County also operates a Latex Paint Recycling Program.
The County should attempt to increase the general public's awareness of the need to divert these wastes from the municipal waste stream.	Implemented/ongoing	The County continues to offer these alternative disposal outlets. Municipalities and waste haulers are taking the lead in providing education. The County maintains information on alternate outlets for waste.
Promote HHW avoidance and use of safer alternatives.	Implemented/ongoing	The County distributes A Guide to Safer Household Cleaners and provides this information on the website.
Promote proper use or re-use of products with hazardous materials/ingredients.	Implemented	The County provides assistance on an as needed basis to inquirers but a full blown program has not been pursued.
Inform residents about the availability of HHW collection as the option of last resort.	Implemented	The County has attempted to educate residents to reduce purchases to only necessary amounts and to donate usable items.
The County should develop a paint re-use program.	Implemented	The County has operated the Latex Paint Recycling Program since 2002.
Foster the development of private sector efforts to re-use, recycle, or otherwise divert HHW from the municipal waste stream.	Partially implemented	The County lists these businesses on the website and in the Recycling Guide.
The County's mobile HHW collection program should include a re-use component.	Implemented	Due to the impractical nature of giving products to the public, this program has been

		discontinued.
HHW collection should be considered the option of last resort.	Implemented	This has been an internal mantra however due to the availability and success of the HHW program it has not been implemented.
Maximize the number of IEPA one-day HHW collection events held within DuPage County.	Implemented	The County continues to make attempts at hosting as many HHW events as possible but due to financial constraints this has been restricted. Delete
Maintain an intergovernmental agreement with the City of Naperville to provide permanent HHW collection services for DuPage County residents in a cost-efficient manner.	Implemented	The County has provided funding for both capital and operational expenses since 1995. Continued funding is dependent upon available revenue and will be considered on an annual basis.
Establish a mobile HHW collection program.	Implemented/ongoing	Since 1996, the County has hosted 63 one day HHW events.
The County should continue to monitor the technical and economic feasibility of waste-to-energy as a final disposal method.	Implemented/ongoing	Staff continues to evaluate waste-to-energy technologies.
The County should continue to monitor the availability of waste-to-energy facilities in the region.	Implemented/ongoing	Staff continues to evaluate waste-to-energy technologies.
The County should continue to monitor and, when appropriate, lobby the General Assembly and the U.S. Congress to shape legislation impacting waste-to-energy.	Not pursued	As technology becomes more standardized and reliable, the County could consider this opportunity.
Any proposals for siting a landfill in DuPage County will be monitored and evaluated.	Implemented	As no property can meet the setback criteria for siting a landfill, transfer stations are the primary method of waste disposal. Delete
The County shall continue to provide educational information on landfilling as it becomes available.	Implemented/ongoing	This item has been addressed by SCARCE with education and the purchase of a landfill

		model.
The County will continue efforts to find alternative uses for sludges.	Not pursued	This has been handled through the Department of Public Works.
The availability of in-county disposal capability should be determined. If in-county disposal will be available for an extended period of time, the provisions of transfer capability may be unnecessary. However, even if in-county disposal capability will be available for an extended period of time, the practicality and desirability of providing transfer capability in the county should be evaluated as a mechanism to improve waste transport efficiencies and to minimize local traffic impacts.	Implemented	As part of this update, the County will be reviewing disposal capacity and making recommendations. Transfer of waste is the preferable method of disposal. In the 2001 update, the County recommended siting additional transfer stations.
The County should encourage development of three to five waste transfer facilities throughout the County. The County should assist the private sector in determining the most appropriate and efficient locations for transfer facilities, and providing education and more about waste transfer stations.	Implemented/ongoing	The County is currently evaluating disposal capacity. Transfer of waste is the preferred method. DuPage published the Solid Waste Transfer in Illinois Handbook in December 1998.
The County should encourage development of recycling operations and landscape waste operations throughout the county. The County assist the private sector in siting such operations. One means by which this may be accomplished is to amend legislation to provide for an expanded definition of construction and demolition debris.	Partially implemented	The County assisted in changing the regulations to allow construction and demolition debris facilities operating in DuPage to be exempt from IEPA permits
The County will continue with and adapt the enforcement program as the two DuPage landfills close to focus on education of proper waste disposal, open dumps, and unpermitted/permited transfer stations. The County will continue to monitor the landfills through the closure/post closure periods.	Implemented/ongoing	The County currently holds an agreement with the IEPA to conduct inspections through 2010.

---

**APPENDIX 8-G**

**DUPAGE COUNTY SWMP  
2012 UPDATE**

---

# DUPAGE COUNTY ILLINOIS



## SOLID WASTE MANAGEMENT PLAN FIVE YEAR UPDATE 2012

Third DuPage County Solid Waste Management Plan Update - February 2008  
Second DuPage County Solid Waste Management Plan Update - April 2002  
First DuPage County Solid Waste Management Plan Five Year Update - June 1996  
DuPage County Solid Waste Management Plan - February 1991

DuPage County  
Daniel J. Cronin, County Board Chairman  
Department of Economic Development & Planning  
421 North County Farm Rd.  
Wheaton, IL 60187  
[www.dupageco.org/sustainability](http://www.dupageco.org/sustainability)

---

## **TABLE OF CONTENTS**

<b>EXECUTIVE SUMMARY</b>	<b>1</b>
<b>1.0 WASTE GENERATION</b>	<b>1</b>
<b>2.0 COUNTY POPULATION</b>	<b>2</b>
<b>3.0 EXISTING FACILITIES</b>	<b>2</b>
<b>4.0 RECYCLING AND DIVERSION</b>	<b>3</b>
<b>5.0 NEEDS ASSESSMENT</b>	<b>5</b>
<b>6.0 RECOMMENDATIONS</b>	<b>6</b>
<b>REFERENCES</b>	<b>6</b>
<b>LIST OF APPENDICES</b>	
<b>APPENDIX A - SOLID WASTE PLANNING AND RECYCLING ACT EXCERPT</b>	
<b>APPENDIX B - ILLINOIS COMMODITY/WASTE GENERATION AND CHARACTERIZATION STUDY- 2009</b>	
<b>APPENDIX C - 2011 MUNICIPAL RECYCLING RATES</b>	
<b>APPENDIX D – METRO AREA LANDFILLS AND TRANSFER STATIONS</b>	
<b>APPENDIX E – TRANSFER STATIONS NEAREST DUPAGE COUNTY</b>	
<b>APPENDIX F – SERVICE AREAS OF TRANSFER STATIONS PROXIMATE TO NORTHWEST DUPAGE COUNTY</b>	
<b>APPENDIX G – SERVICE AREAS OF TRANSFER STATIONS PROXIMATE TO NORTHEAST DUPAGE COUNTY</b>	
<b>APPENDIX H - SERVICE AREAS OF TRANSFER STATIONS PROXIMATE TO SOUTHEAST DUPAGE COUNTY</b>	
<b>APPENDIX I – SERVICE AREAS OF TRANSFER STATIONS PROXIMATE TO SOUTHWEST DUPAGE COUNTY</b>	

---

## **EXECUTIVE SUMMARY**

The State of Illinois passed the Solid Waste Planning and Recycling Act in 1988 (“Act”). The Act mandated that counties must each submit to the Illinois Environmental Protection Agency an officially adopted plan for the management of municipal waste generated within its boundaries. Such plan shall conform with the waste management hierarchy established as State policy in subsection (b) of Section 2 of the Illinois Solid Waste Management Act (Appendix A).

The initial DuPage County Solid Waste Management Plan was adopted February 1991 with subsequent updates completed in 1996, 2001 and 2008. The 15-year update focused on providing status of the programs in the original plan and providing a snapshot of waste disposal in the County. It also highlighted an increased waste generation rate from the previous plan.

This Plan update reconsiders the current waste disposal capacity of the County and includes new recycling successes due to the landfill ban placed on electronics, the commercial recycling program and new food scrap collection and composting programs.

### **1.0 WASTE GENERATION**

For purposes of this document, need has been derived from first calculating a waste generation rate per capita and then reviewing the capacity of existing pollution control facilities. This number can be impacted by waste hauling contracts with municipalities and between waste companies. The closest pollution control facility is not always economically feasible for all waste haulers. Due to confidentiality of these contracts, this report only takes into account information that is publicly available.

In recent years the waste generation rate has been 8.15 pounds per person per day (lbs/pp/day) in 2008 and most recently 2011 reported to be 5.3. These numbers are based solely on residential hauling reports submitted to the County from the municipalities and the waste haulers.

Some factors that have an impact on the rate include the economy and the success of recycling. Residential recycling has increased in the County from 36% in 2008 to 42% in 2011. This can likely be attributed to the countywide implementation of single stream recycling and the use of toter/cart systems for recycling. Commercial recycling data remains unavailable as there is no reporting requirement.

In 2009, the Illinois Department of Commerce and Economic Opportunity commissioned the Illinois Recycling Association to complete the *Illinois Commodity/Waste Generation Study*<sup>1</sup>. The study concluded that the waste generation rate for the Chicago Metropolitan area was 8.3 lbs/pp/day. Their conclusion included sampling at landfills, modeling to account for moisture content and calculations for commercially generated waste.

The following data on the content of the waste stream was derived from the samples conducted at landfills throughout the State.

- Construction & Demolition Debris – 25.3%
- Paper – 23.4%
- Organics – 20.7%
- Plastic – 13.0%
- Textiles – 7.0%
- Metal – 4.8%
- Glass 2.8%
- Inorganics - 2.4%
- Household Hazardous Waste 0.4%
- Beverage

In 2010, the U.S. EPA published the Municipal Solid Waste Generation, Recycling, and Disposal in United States: Facts and Figures for 2010. The document reported a waste generation rate of 4.43 lbs/pp/day an increase from 3.66 lbs/pp/day and a 34.1% recycling rate up from less than 10% between 1980 and 2010.

Due to the actual samples and inclusion of commercial waste, the County is adopting the rate identified by the *Illinois Commodity/Waste Generation Study*<sup>1</sup> 9.19 lbs/pp/day for the Chicago Metropolitan Region.

## **2.0 COUNTY POPULATION**

The 2010 DuPage County population was reported to be 916,924 in the County's 2011 Statistical Profile<sup>2</sup>. Growth within the County has slowed with minor growth of 1.4% since 2000. Assuming a similar growth rate over the next five years, this plan needs to account for 929,760 residents generating 1,537,842 tons of waste per year.

## **3.0 EXISTING FACILITIES**

Table 1 below provides a snapshot of existing pollution control facilities located in the County. The first ten facilities listed operate under permits from the Illinois Environmental Protection Agency. The last two facilities are construction and demolition debris recycling centers and are allowed to operate without IEPA permits under the conditions set forth 415 ILS 5/22.38. If the facilities cannot meet these criteria, they also must obtain a permit.

**TABLE 1.0 EXISTING POLLUTION CONTROL FACILITIES IN DUPAGE COUNTY**

FACILITY	LOCATION	WASTE STREAM	CAPACITY
DuKane Transfer Facility	West Chicago	Municipal Solid Waste	3,000 tons/day
DuPage Yard Waste	West Chicago	Landscape Waste	400 yd <sup>3</sup> /day
Anderson Landscape Supply, LLC	Elmhurst	Landscape Waste	260 yd <sup>3</sup> /day
A.K. Mulch	Villa Park	Landscape Waste	40 yd <sup>3</sup> /day
Advanced Environmental Systems	Itasca	Potentially Infectious Medical Waste	14,000 lbs/day
Recycle Technologies, Inc.	Wood Dale	Antifreeze	22,700 gal/day
St. Francis Crematory	Wood Dale	Animal Carcass	Based on storage capacity
Mallard Lake Landfill	Hanover Park	Municipal Solid Waste	Closed
Greene Valley Landfill	Naperville	Municipal Solid Waste	Closed
Bensenville Landfill	Bensenville	Construction & Demolition Debris	Closed
K. Hoving Recycling & Disposal	West Chicago	Construction & Demolition Debris	Not specified
Neil's Hauling	West Chicago	Construction & Demolition Debris	Not specified

#### **4.0 RECYCLING AND DIVERSION**

The *Illinois Commodity/Waste Generation and Characterization Study* concludes that a 19.1% recycling rate is more accurate when industrial/commercial/institutional and construction/demolition waste is included in the calculation. While the County's residential rate was calculated to be 41% for 2011 (Appendix C), commercial recycling is much lower. The study is statewide and does not specifically account for the County's two construction demolition debris recycling operations nor its proximity to many recycling centers including the intermediate processing facility in Carol Stream. It also does not consider the County's successful commercial recycling, electronics recycling and document shredding programs (see Section 6.0). Roughly one-third of the municipalities providing commercial recycling data yielded a 21% commercial recycling rate. This rate does not consider segregated recycling of items such as scrap metal, electronics and document shredding.

A more accurate combined recycling rate for DuPage is 30%, an average of the reported residential and commercial recycling rates.

## **5.0 NEEDS ASSESSMENT**

This Plan's needs assessment is limited to municipal solid waste which is defined as "garbage, general household and commercial waste, industrial lunchroom or office waste, landscape waste, and construction or demolition debris." (415 ILCS 5/3.290). It does not include special waste, hazardous waste, potentially infectious medical waste, pollution control waste and clean construction and demolition debris. Because these wastes are not included in the assessment, facilities proposed to handle these materials should be considered on a case by case basis. Single-stream facilities accepting exclusively waste materials that are not classified as municipal solid waste as defined above, and which require local siting approval in accordance with the Illinois Environmental Protection Act, may be considered by the appropriate local authority.

In recent years, a number of waste-to-energy technologies have been contemplated in the solid waste industry, such as gasification, pyrolysis, and waste-to-fuel in addition to more traditional mass-burn incineration technology. The County continues its assertion that these types of technologies are inconsistent with the County's structure and are an inappropriate disposal method within the County for municipal solid waste. The status of development of these technologies and their appropriateness for development in the County will be considered in future Plan Updates.

The DuKane Transfer Facility accepts waste approximately 307 days per year (Monday – Saturday, excluding some holidays) Previous studies by Shaw Environmental<sup>4</sup> have estimated that 50% of the waste brought to the facility is generated from within DuPage County. Therefore, the facility is capable of handling 460,500 tons/year (307 operating days x 1,500 tons/day). Using the U.S. EPA's conversion<sup>3</sup> for volume-to-weight for landscape waste, the two facilities can accept another 63,319 tons of the waste stream (660 yd<sup>3</sup> x 625 lbs/yd<sup>3</sup>/ 2,000 lbs/ton x 307 days). Taking into account a 30% recycling/diversion rate, which prevents 461,352 tons from being landfilled, approximately 552,671 tons remain.

Recent legislation which permits the collection and composting of food scraps/organics is having an impact on waste within the County as well. Several businesses are leading the effort to use composting as an alternative to disposal. At this time, all organics are composted outside of the County. This has impacted how quickly and economically this waste can be removed from the waste stream. Because it is an additional truck route, costs of this single stream collection are expensive and in some cases are prohibitive. The County would benefit from more local facilities that can meet the site location requirements. Existing facilities should be utilized to address this new waste stream.

In the information provided by the *Illinois Commodity/Waste Generation and Characterization Study*, construction and demolition debris is the largest portion of the waste stream. DuPage

County participated in efforts to make it easier to recycle this waste. The efforts resulted in Section 22.38 of the Environmental Protection Act which allows facilities to recycle construction and demolition debris without a permit in counties with a population of 700,000 or more. DuPage County is currently home to two construction and demolition debris recycling facilities which add to the diversion of waste from landfills.

Public Act 97-0287 - Electronic Products Recycling & Reuse Act also impacted the County's waste stream. Certain electronics products were banned from landfills as of January 1, 2012. Fortunately, the County had been working with governmental partners since 2008 to provide electronics recycling drop-off locations. The County has continued to provide a vendor for recycling and promotes events and locations. In 2011, the County met with municipalities and haulers to ensure that the framework was in place to handle the diversion of the electronics. As of 2012, the County through its partners has recycled more than 3 million pounds of electronics.

Appendices D and E are maps of permitted landfills and transfer stations in the region. Appendices F, G, H and I show transfer stations in adjacent counties which may provide service to residents and businesses within the County. Service areas were determined in a 2007 report completed by Shaw Environmental for DuPage County. They reflect actual services areas identified in siting documents or a 10-mile radius determined to be the maximum economical distance for a waste hauling company.

Disposal in landfills is not the preferred method of disposal but at this time, it is still preferred to incineration. The County currently has no operating landfills and this Plan concludes that new landfills are not possible or needed within the County. The preferred method for disposal continues to be waste transfer. The above mentioned maps indicate that while solid waste is currently being handled at existing facilities, they may not be a long term solution for the County's disposal needs. Factors that contribute to the need for new facilities are an increasing population; rising waste generation rate and fuel/operating costs. Future conditions may necessitate a new facility in the southern portion of the County. The maps and table indicate that this area is somewhat underserved and that some areas are out of range for existing facilities. These conditions can result in less competitive waste hauling and higher costs especially in unincorporated areas where homeowners contract directly with waste haulers. There is a direct correlation with cost and distance to waste disposal facility.

Under the aforementioned conditions, it is potentially foreseeable that the out-of-county facilities may cease serving all, or parts, of the current DuPage area. In the event that occurs, there would be a service gap in the affected areas thereby creating a potential need for a new facility.

## **6.0 RECOMMENDATIONS**

Source reduction and recycling remain the first step in managing waste. The County will continue to promote the use of reusable items and support efforts to reduce waste generated. In 2010, the County implemented waste reduction at the campus by launching the use of reusable dishware at the Convalescent Center and the use of reusable mugs in the cafeterias. The project has netted measureable waste reduction as well as energy and cost savings.

Also in 2010, the County launched a Commercial Recycling program. The program was implemented to increase recycling efforts with commercial entities. It is ongoing and has resulted in more than 3,500 tons of waste being diverted from landfills. The program is also working with DuPage businesses to launch food scrap composting. The County has set a goal of bringing 100 business locations online with composting by June of 2013. The County is almost halfway to this goal at the publication of this document.

Recycling remains a priority for the County. As relayed in the USEPA Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2010:

“Recycling has environmental benefits at every stage in the life cycle of a consumer product—from the raw material with which it’s made to its final method of disposal. Aside from reducing GHG emissions, which contribute to global warming, recycling also reduces air and water pollution associated with making new products from raw materials. By utilizing used, unwanted, or obsolete materials as industrial feedstocks or for new materials or products, we can each do our part to make recycling work.”

Solid waste industry groups have been working on disposal alternatives for latex paint, carpet, plastic bags and medicine. The County will continue to monitor and participate in these discussions. State legislation also created a Recycling Task Force. The County will monitor progress and provide input as requested to the Task Force to aid in increasing recycling. DuPage County residents are currently provided solutions for household hazardous waste and unwanted medications.

<sup>1</sup> Illinois Commodity/Waste Generation and Characterization Study- 2009  
Illinois Recycling Association as commission by Illinois DCEO

<sup>2</sup> DuPage County 2011 Statistical Profile

<sup>3</sup> U.S. E.P.A. Measuring Recycling: A Guide for State and Local Governments Appendix B Standard  
Volume-to-Weight Conversion

<sup>4</sup> Application for Local Siting Approval for the West DuPage Recycling & Transfer Facility

## APPENDIX A

### SOLID WASTE PLANNING AND RECYCLING ACT EXCERPT (415 ILCS 15/1)

Sec. 1. This Act shall be known and may be cited as the Solid Waste Planning and Recycling Act.

Sec. 2. (a) The General Assembly finds:

(1) that parts of this State have inadequate and rapidly diminishing disposal capacity for municipal waste;

(2) that counties should have the primary responsibility to plan for the management of municipal waste within their boundaries to insure the timely development of needed waste management facilities and programs;

(3) that waste reduction and recycling are preferable to the disposal of municipal waste;

(4) that removing certain materials from the municipal waste stream will decrease the flow of waste to sanitary landfills, aid in the conservation and recovery of valuable resources, conserve energy in the manufacturing process, increase the supply of reusable materials for the State's industries, and reduce substantially the need for municipal waste incineration facilities and contribute to their overall combustion efficiency, thereby resulting in a significant cost savings in the planning, construction and operation of these facilities; and

(5) that solid waste planning should be encouraged to take place on a multi-county, regional basis and through inter-governmental cooperation agreements whereby various units of local government within a region determine the best methods and locations for disposal of solid waste. This amendatory Act of 1992 shall not be construed to impact the authority of units of local government in the siting of solid waste disposal facilities.

(b) It is the purpose of this Act to provide incentives for decreased generation of municipal waste, to require certain counties to develop comprehensive waste management plans that place substantial emphasis on recycling and other alternatives to landfills, to encourage municipal recycling and source reduction, and to promote composting of yard waste.

---

## APPENDIX B

### *Illinois Commodity/Waste Generation and Characterization Study- 2009*

#### DuPage County Municipal Solid Waste (MSW) Generation

	County Generation (lb/yr)	Total Generation (tons)		County Generation (lb/yr)	Total Generation (tons)
<b>Paper</b>	<b>1,104,8</b>	<b>513,290</b>	<b>Metal</b>		
Newsprint	173.9	80,780	Other Ferrous	55.2	25,650
High Grade Office Paper	67.3	31,270	Other Non-Ferrous	5.1	2,390
Magazines/Catalogs	70.9	32,930	Other Metal	21.5	9,980
Uncoated OCC/Kraft	584.9	271,730			
Boxboard	40.6	18,850	<b>Organics</b>	<b>584.8</b>	<b>271,690</b>
Mixed Paper - Recyclable	71.2	33,100	Yard Waste - Compostable	73.3	34,070
Compostable Paper	73.9	34,330	Yard Waste - Woody	67.3	31,270
Other Paper	22.2	10,300	Food Scraps	316.8	147,200
			Bottom Fines & Dirt	20.0	9,310
<b>Beverage Containers</b>	<b>5.4</b>	<b>2,490</b>	Diapers	45.8	21,720
Milk & Juice Cartons/Boxes - Coated	5.4	2,490	Other Organic	60.5	28,120
<b>Plastic</b>	<b>373.5</b>	<b>173,520</b>	<b>Inorganics</b>	<b>136.5</b>	<b>63,440</b>
#1 PET Bottles/Jars	25.6	11,900	Televisions	6.5	3,020
#1 Other PET Containers	2.2	1,000	Computer Monitors	4.6	2,130
#2 HDPE Bottles/Jars - Clear	10.0	4,660	Computer Equipment/Peripherals	5.3	2,440
#2 HDPE Bottles/Jars - Color	14.6	6,770	Electronic Equipment	24.2	11,260
#2 Other HDPE Containers	2.0	950	White Goods - Refrigerated	8.6	4,010
#5 Exp. Polystyrene Packaging	24.3	11,290	White Goods - Not refrigerated	19.0	8,820
#3-#7 Other - All	24.6	11,430	Lead-acid Batteries	16.0	7,430
Other Rigid Plastic Products	91.2	42,370	Other Household Batteries	1.1	500
Grocery & Merchandise Bags	17.3	8,050	Tires	29.0	13,460
Trash Bags	25.8	12,000	Household Bulky Items	22.2	10,330
Commercial & Industrial Film	46.4	21,570	Fluorescent Lights/Ballasts	0.1	40
Other Film	30.3	14,060			
Other Plastic	59.1	27,470	<b>Textiles</b>	<b>214.6</b>	<b>99,720</b>
			Carpet	38.8	18,010
<b>Glass</b>	<b>86.2</b>	<b>40,060</b>	Carpet Padding	5.7	2,650
Recyclable Glass Bottles & Jars	80.9	37,590	Clothing	71.5	33,230
Flat Glass	3.8	1,770	Other Textiles	98.6	45,830
Other Glass	1.5	700			
			<b>Household Hazardous Waste</b>	<b>28.8</b>	<b>13,370</b>
<b>Metal</b>	<b>138.2</b>	<b>64,200</b>			
Aluminum Beverage Containers	15.7	7,290	<b>Construction and Demolition Debris (C&amp;D)</b>	<b>682.6</b>	<b>317,110</b>
Other Aluminum	13.0	6,040			
HVAC Ducting	0.6	300	<b>Total MSW (tons)</b>		<b>1,558,890</b>
Ferrous Containers (Tin Cans)	27.0	12,540	<b>Total MSW (pounds/person/day)</b>		<b>9.19</b>

2007 population 929,192

County generation based on 2007 data.

## APPENDIX C

### 2011 MUNICIPAL RECYCLING RATES

Municipality	Tons of Refuse Collected (1)	Tons of Recycled Collected (1)(2)	Landscape Waste Tons (1)(2)	Total Recycled	Total Waste	Recycling Rate
Addison	35,683.00	2,119.81	9,912.00	12,031.81	47,714.81	25%
Aurora	34,750.55	15,930.96	8,346.77	24,277.73	59,028.28	41%
Bartlett*	12,995.00	4,736.00	2,552.00	7,288.00	20,283.00	36%
Bloomingtondale	4,690.20	1,326.00	0.00	1,326.00	6,016.20	22%
Carol Stream	10,654.80	4,178.67	4,621.00	8,799.67	19,454.47	45%
Darien	3,185.81	1,828.89	991.49	2,820.38	6,006.19	47%
Downers Grove	9,926.00	6,368.00	3,152.00	9,520.00	19,446.00	49%
Glen Ellyn	7,273.00	4,210.00	2,761.00	6,971.00	14,244.00	49%
Hanover Park	10,722.00	2,412.00	952.00	3,364.00	14,086.00	24%
Lisle	3,454.73	2,167.56	605.51	2,773.07	6,227.80	45%
Lombard	16,250.00	10,145.00	3,003.00	13,148.00	29,398.00	45%
Naperville*	38,487.00	16,629.49	9,453.00	26,082.49	64,569.49	40%
Oak Brook	2,910.00	1,169.00	183.00	1,352.00	4,262.00	32%
Roselle	7,899.20	2,938.77	906.29	3,845.06	11,744.26	33%
St. Charles	9,960.00	6,403.00	3,893.00	10,296.00	20,256.00	51%
Villa Park	6,857.99	1,643.99	1,403.57	3,047.56	9,905.55	31%
Warrenville	1,959.10	1,139.50	355.10	1,494.60	3,453.70	43%
West Chicago	5,767.09	2,713.52	2,275.00	4,988.52	10755.61	46%
Westmont	4,078.00	1,739.00	885.00	2,624.00	6,702.00	39%
Wheaton	9,354.51	7,099.25	12,046.00	19,145.25	28,499.76	67%
Willowbrook	1,113.45	589.45	118.77	708.22	1,821.67	39%
Winfield	1,888.30	1,040.70	536.10	1,576.80	3,465.10	46%
Wood Dale	4,111.00	1,158.00	1,249.00	2,407.00	6,518.00	37%
Woodridge	4,893.60	3,525.00	1,068.00	4,593.00	9,486.60	48%
<b>TOTAL/AVERAGE</b>	<b>248,864.33</b>	<b>103,211.56</b>	<b>71,268.60</b>	<b>173,154.16</b>	<b>417,328.29</b>	<b>41%</b>

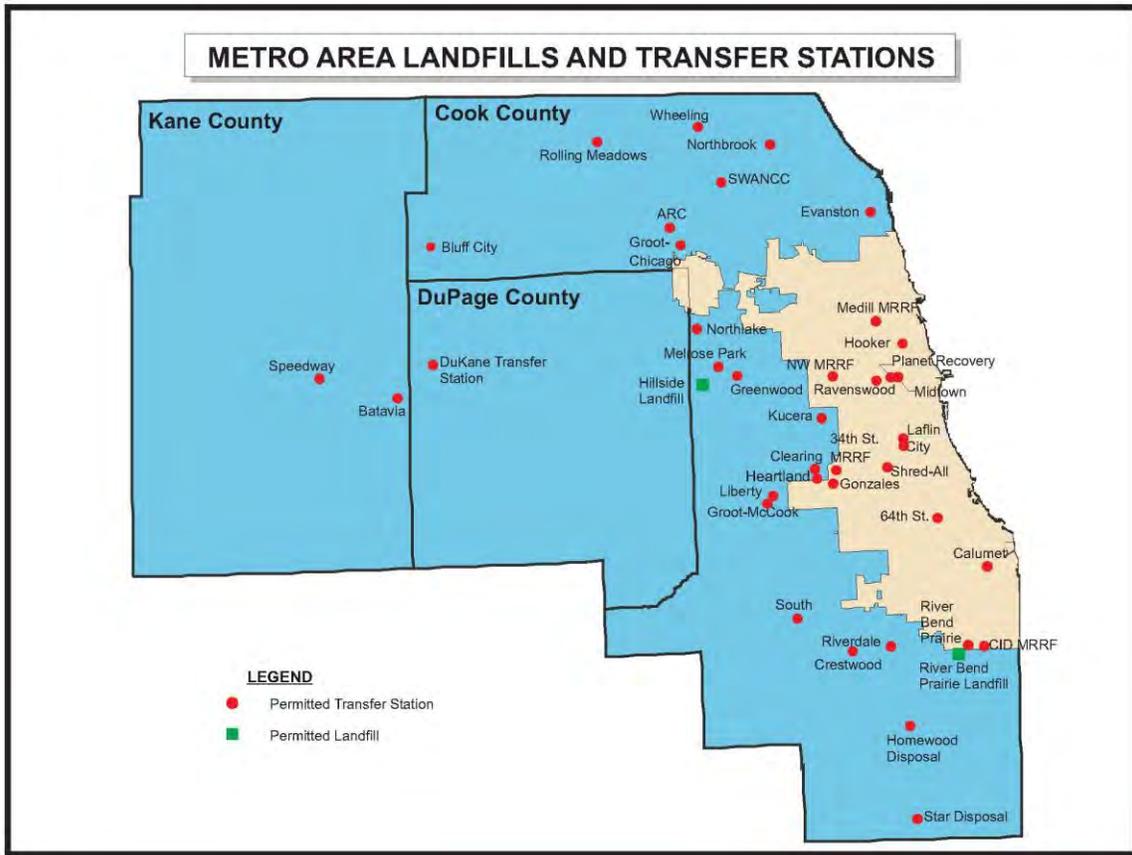
KEY:

(1) Data as provided by the municipality or waste hauler.

(2) Standard Volume-to-Weight Conversion Factors "Measuring Recycling - A Guide For State and Local Governments U.S. Environmental Protection Agency Sept. 1997

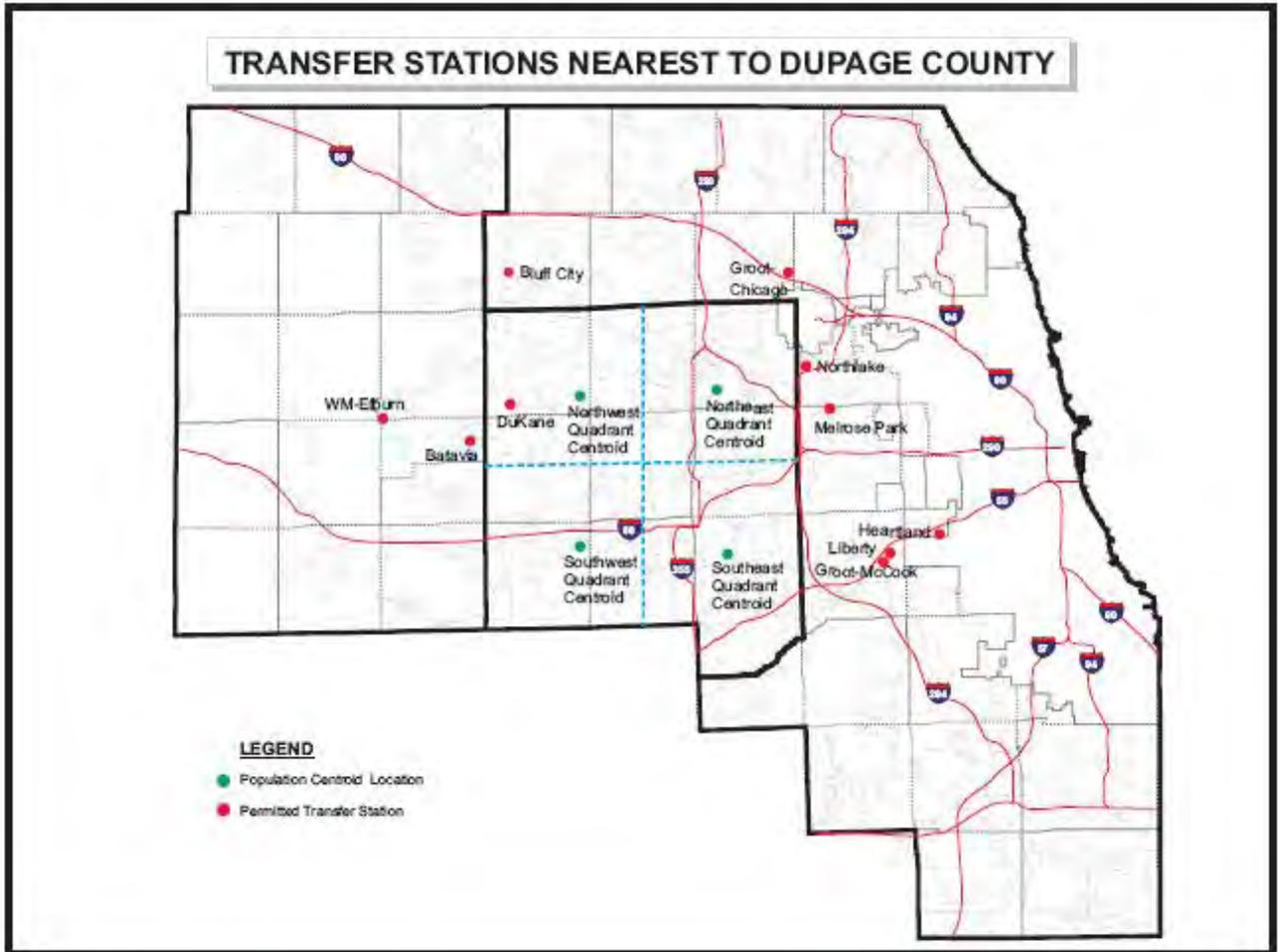
MSW (compacted in truck) (cubic yards x 750 lbs/2000) LSW (loose) cubic yard x 625 lbs/2000

**APPENDIX D**



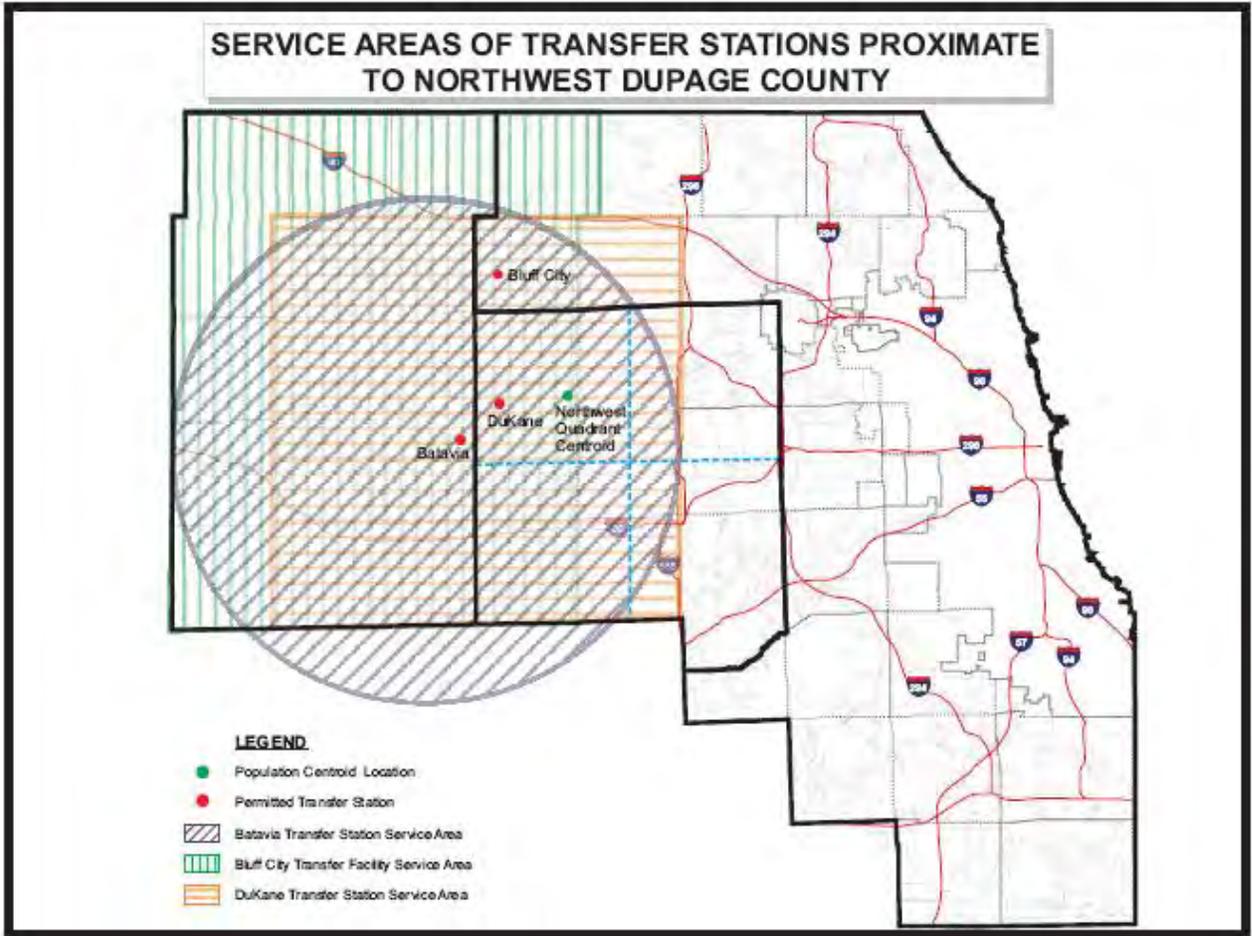
2007 Shaw Environmental Report completed for the County of DuPage

## APPENDIX E



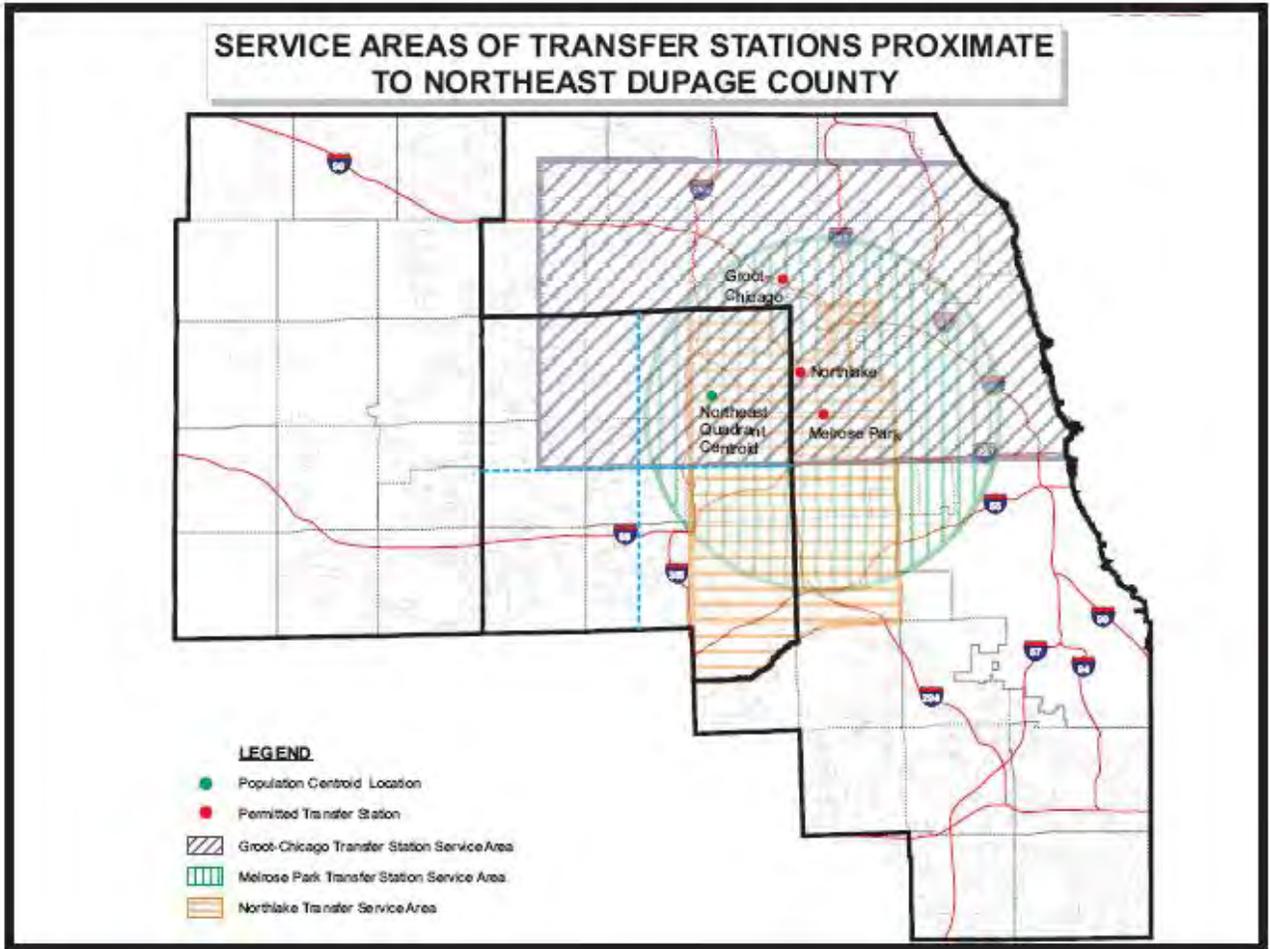
2007 Shaw Environmental Report completed for the County of DuPage

**APPENDIX F**



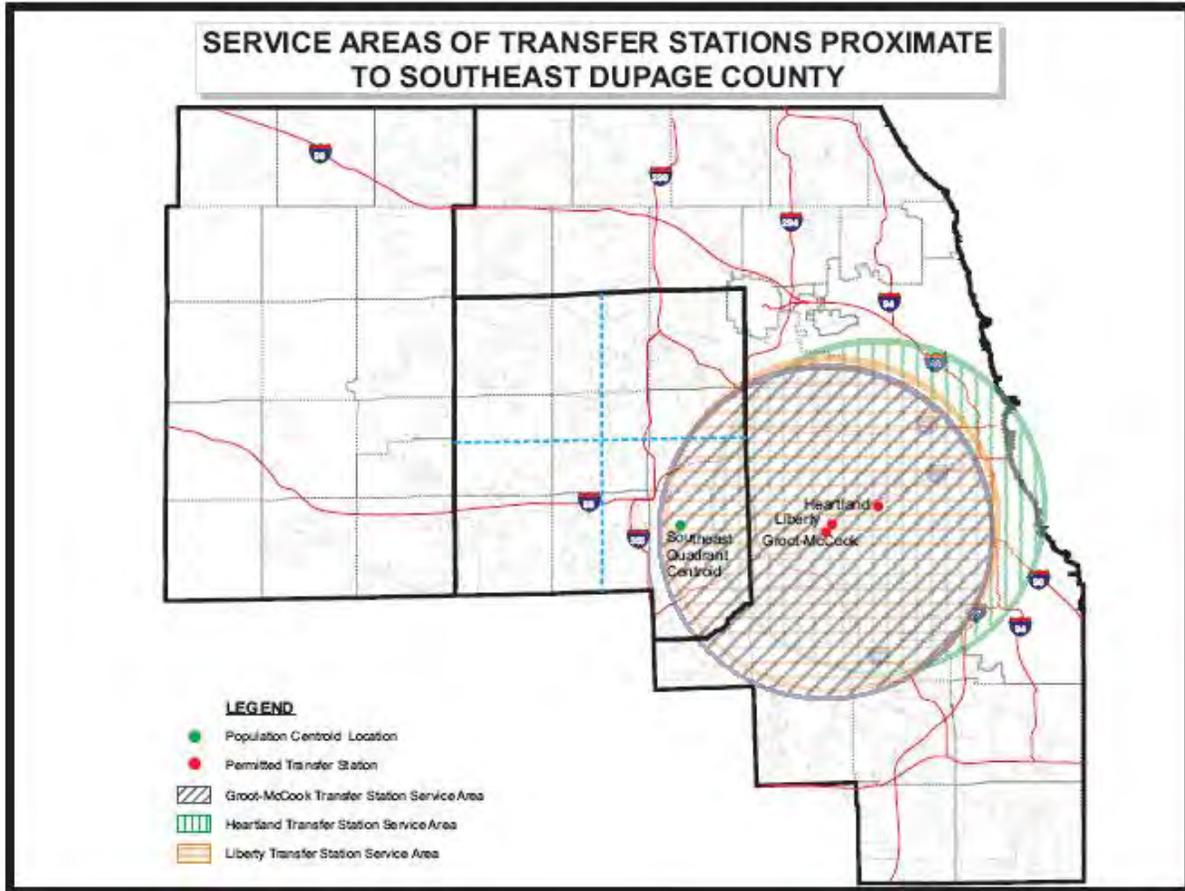
2007 Shaw Environmental Report completed for the County of DuPage

## APPENDIX G



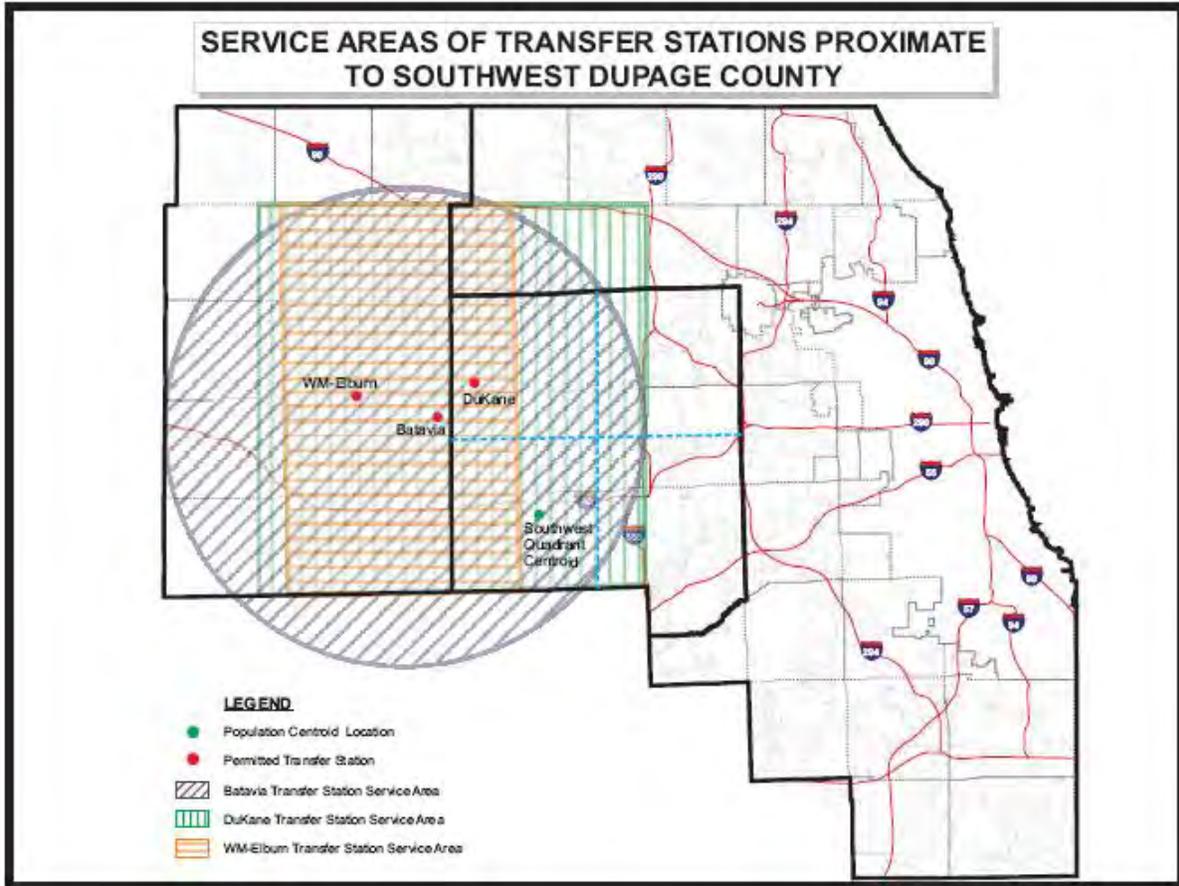
2007 Shaw Environmental Report completed for the County of DuPage

**APPENDIX H**



2007 Shaw Environmental Report completed for the County of DuPage

## APPENDIX I



2007 Shaw Environmental Report completed for the County of DuPage

---

**APPENDIX 8-H**

**DUPAGE COUNTY SWMP  
2017 UPDATE**

---



# DUPAGE COUNTY

ENVIRONMENTAL DIVISION

## Solid Waste Management Plan Five Year Update 2017



DuPage County  
Daniel J. Cronin, County Board Chairman  
Building & Zoning Department  
Environmental Division  
421 North County Farm Rd.  
Wheaton, IL 60187  
(630) 407-6700  
[www.dupageco.org/sustainability](http://www.dupageco.org/sustainability)

## **TABLE OF CONTENTS**

### **1.0 Introduction**

### **2.0 Waste Generation Information**

2.1 Definition

2.2 Population Trends and Forecasts

2.3 Waste Composition - IL Commodity/Waste Generation and Characterization Study

2.4 Waste Generation

### **3.0 Recycling & Diversion**

3.1 Municipal Contracts

3.2 Multi-Family Recycling

3.3 Construction & Demolition Debris Recycling

3.4 Household Hazardous Waste

3.5 Electronics Recycling

3.6 Sharps/Needle Disposal

3.7 Special Collections/Recycling Events

3.8 Landscape Waste and Food Scrap

3.9 Recycling and Contamination

### **4.0 Existing Facilities & Capacity**

4.1 Waste Disposal Capacity

### **5.0 Moving Forward**

**Appendix A**

**Appendix B**

## **Section 1.0**

### **Introduction**

The State of Illinois enacted the Solid Waste Planning and Recycling Act in 1988 (“Act”). The Act mandated that counties must each submit to the Illinois Environmental Protection Agency an officially adopted plan for the management of municipal waste generated within its boundaries. The Act serves to encourage the continuous planning for solid waste management and pushes local governments to perpetually move forward with a waste reduction and recycling agenda. The Assembly cited diminishing landfill capacity along with the more environmentally preferable management of waste by increasing conservation of valuable resources and energy. The effort was reinforced in 2014, when the Solid Waste Hauling and Recycling Program Act was put into place to mandate the availability of recycling to commercial entities in the Chicago metro region. Haulers must offer as part of waste hauling or as an additional service recycling services.

The initial DuPage County Solid Waste Management Plan was adopted February 1991 with subsequent updates completed in 1996, 2001, 2007 and 2012. This Plan update evaluates the waste disposal capacity of the County, electronic recycling coverage, and identifies food scrap collection and compost feasibility within the County. The initial Solid Waste Management Plan included multiple recommendations to reduce, recycle and handle solid waste. The County, along with many valuable local government and private sector partners successfully completed several goals including: construction and operation of a regional recycling center and a household hazardous waste facility; the establishment of several recycling drop-off locations; a latex paint recycling and reuse program; an environmental education program as well as supporting reduced requirements on construction and demolition debris recycling.

The United States Environmental Protection Agency has been actively moving perceptions for the management of solid waste from a disposal and recycling toward a much broader delineation of sustainable materials management. The shift is demonstrative of worldwide efforts to embrace life cycle analyses of resource consumption. This approach recognizes that many items should have a second or third life prior to final landfill disposal. Another term that has grown in popularity is “closed loop” which signifies an effort to maintain resources in a manner that does not allow them to go unused at any point.

This perspective of material management has influenced this solid waste management plan update. This document will take a broader approach to planning for waste by considering other technologies that may be a higher or best use in a waste hierarchy. Items that may remain in the waste stream cannot be recycled or reused without significant economic investment so the need for disposal is still prevalent.

## **Section 2.0**

### **Waste Generation**

It is beneficial to understand that the waste stream included in solid waste planning is limited to the items and definitions described below. There are many other waste streams that are generated by industrial, commercial, business entities that do not fall within the definition of municipal solid waste.

## 2.1 Definitions

The definitions below are taken from the {Illinois} Environmental Protection Act, 415 Illinois Compiled Statutes.

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

**Food scrap.** "Food scrap" means garbage that is (i) capable of being decomposed into compost by composting, (ii) separated by the generator from other waste, including, but not limited to, garbage that is not capable of being decomposed into compost by composting, and (iii) managed separately from other waste, including, but not limited to, garbage that is not capable of being decomposed into compost by composting. "Food scrap" includes, but is not limited to, packaging, utensils, and food containers composed of readily biodegradable material. For the purposes of this Section, packaging, utensils, and food containers are readily biodegradable if they meet the ASTM D6400 standard.

**Garbage.** "Garbage" is waste resulting from the handling, processing, preparation, cooking, and consumption of food, and wastes from the handling, processing, storage, and sale of produce.

**General Construction or Demolition Debris.** "General Construction or Demolition Debris" means non-hazardous, uncontaminated materials resulting from the construction, remodeling, repair, and demolition of utilities, structures, and roads, limited to the following: bricks, concrete, and other masonry materials; soil; rock; wood, including non-hazardous painted, treated, and coated wood and wood products; wall coverings; plaster; drywall; plumbing fixtures; non-asbestos insulation; roofing shingles and other roof coverings; reclaimed or other asphalt pavement; glass; plastics that are not sealed in a manner that conceals waste; electrical wiring and components containing no hazardous substances; and corrugated cardboard, piping or metals incidental to any of those materials. General construction or demolition debris does not include uncontaminated soil generated during construction, remodeling, repair, and demolition of utilities, structures, and roads provided the uncontaminated soil is not commingled with any general construction or demolition debris or other waste...

**Household waste.** "Household waste" means any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas).

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

**Recycling, Reclamation, Reuse.** "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.

**Resource conservation.** "Resource conservation" means reduction of the amounts of waste that are generated, reduction of overall resource consumption and the utilization of recovered resources.

**Sanitary landfill.** "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 operation, or by such other methods and intervals as the Board may provide by regulation.

**Transfer station.** "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. ..

**Waste.** "Waste" means any garbage, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility or other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows, or coal combustion by-products as defined in Section 3.135, or industrial discharges which are point sources subject to permits under Section 402 of the Federal Water Pollution Control Act, as now or hereafter amended, or source, special nuclear, or by-product materials as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 921) or any solid or dissolved material from any facility subject to the Federal Surface Mining Control and Reclamation Act of 1977 (P.L. 95-87) or the rules and regulations thereunder or any law or rule or regulation adopted by the State of Illinois pursuant thereto.

## **2.2 Population Trends & Forecasts**

The 2010 DuPage County population was reported to be 916,925 from the U.S. Census Bureau. The Bureau projects the County growth to slow to 1.4% increase since 2010 with an average 2.72 persons/household. Current U.S. Census estimates put the population at 929,368 including 338,083 households. The State of Illinois has been experiencing a population decline starting in 2013 according to the U.S. Census Bureau estimates from 2016.

## **2.3 Waste Composition - IL Commodity/Waste Generation and Characterization Study**

In 2014, the Illinois Department of Commerce and Economic Opportunity commissioned the Illinois Recycling Association who utilized CDM Smith to complete an update to the 2008 *Illinois Commodity/Waste Generation Study 2*<sup>1</sup>. The report developed metrics for municipal solid waste and industrial, commercial and institutional solid waste generated throughout the State of Illinois. Their methodology included sampling at landfills, modeling to account for moisture content and calculations for commercially generated waste. The data provides the State with a better understanding of what items are being landfilled and enables entities to prioritize efforts based on recycling, diversion availability, and quantity of varying categories of waste. The data can also be folded into strategic planning efforts at the county level.

---

<sup>1</sup> *Illinois Commodity/Waste Generation Study*

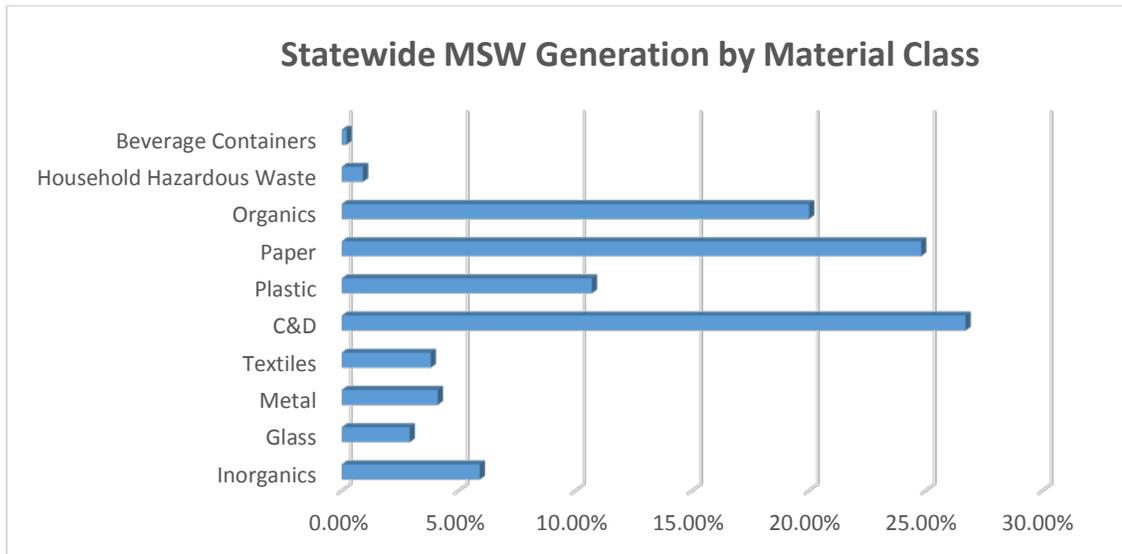


Figure 1: Compiled from data included in the Illinois Commodity/Waste Generation Study Update March 30, 2015

The study also identified the top ten waste categories for both residential municipal solid waste, and urban industrial, commercial & institutional. The tables below reflect just over 50% of the overall waste stream with organics/food scraps comprising the highest percentage by weight. Other large contributors include yard waste and uncoated old corrugated cardboard and brown paper material.

Top Ten Individual Material Categories in Landfilled Urban Residential MSW	
Category	Waste Composition %
Food Scraps	20.6%
Yard Waste - Compostable	5.4%
Uncoated OCC/Kraft	4.3%
Compostable Paper	4.1%
Recyclable Glass Bottles & Jars	3.6%
Other Organic	3.6%
Painted Wood	3.4%
Mixed Paper - Recyclable	3.2%
Diapers	3.2%
Household Bulky Items	3.2%
<b>Total</b>	<b>54.7%</b>

Table 2: Data from Table 2-9, Illinois Commodity/Waste Generation Study Update March 30, 2015

Top Ten Individual Material Categories in Landfilled Urban Industrial Commercial & Institutional Municipal Solid Waste	
Category	Waste Composition %
Food Scraps	15.6%
Uncoated OCC/Kraft	13.3%
Bottom Fines & Dirt	3.8%
Other C&D	3.7%
Compostable Paper	3.6%
Commercial & Industrial Film	3.6%
Wood Pallets	3.4%
Other Film	3.3%
Painted Wood	2.7%
Other Rigid Plastic Products	2.6%
<b>Total</b>	<b>55.6%</b>

Table 1: Data from Table 2-9, Illinois Commodity/Waste Generation Study Update March 30, 2015

The study identified that standard recyclable materials, glass bottles and jars, aluminum beverage containers, ferrous containers, and food waste were at a lower recovery rate than the national average. A recommendation of this plan is to improve the diversion of these commodities.

## 2.4 Waste Generation Rate

Waste generation varies annually. Table 3 provides a summary of the annual rates from the inception of the first Solid Waste Management Plan in 1990. A waste generation rate is inclusive of all items that are generated from residential, construction & demolition debris, commercial, industrial, and institutional. The rate does not take into account the materials that are repurposed, recycled or otherwise recovered prior to disposal.

The rate identified below was derived from the Illinois Commodity/Waste Generation and Characterization Study Update March 2015 and is an estimate based on landfill waste composition audits and associated modeling. It is consistent with data reflecting an ongoing increase as noted in the U.S. EPA's Advancing Sustainable Materials Management 2013 Fact Sheet which reports that the United States consumed 46 percent more materials on a per capita basis in the year 2000 than in 1975.

The information shows a slight decrease in waste generation for DuPage County since the last Plan Update in 2012. While this time frame included an economic downturn, it also saw a shift in lifestyles for many residents and businesses. Sustainability, zero waste and other resource conservation efforts have become increasingly mainstream. Many corporations and businesses have incorporated sustainability plans that set recycling and waste goals. The impact of this shift is expected to be reflected over the next 5 year time frame ending in 2022.

## Historical Waste Generation Estimates for DuPage County Solid Waste Management Plans

Year	Population	lbs./Capita/Day	Estimated tons of MSW/day (Residential, ICI, C&D)	Countywide estimated tons /year
1990	781,200	8.0	3,124	1,140,260
1996	843,067	7.17	3,022	1,103,030
2001	904,161	6.9	3,119	1,138,564
2007	932,670 <sup>(1)</sup>	6.9	3,217	1,276,592
2012	929,760 <sup>(1)</sup>	9.19 <sup>(2)</sup>	4,272	1,537,842
2017	929,368 <sup>(1)</sup>	8.7 <sup>(2)</sup>	4,042	1,475,604

Table 3

<sup>(1)</sup> Population based on growth estimates not actual U.S. Census data.

<sup>(2)</sup> Rate taken from Illinois Commodity/Waste Generation and Characterization Studies

### Section 3.0

#### Recycling and Diversion

In 2011, The County’s residential recycling rate was calculated to be 41%, with commercial recycling much lower. The *Illinois Commodity/Waste Generation and Characterization Study*<sup>1</sup> concludes that a 19.1% recycling rate is more accurate when industrial/commercial/institutional and construction/demolition waste is included with standard recycling in the calculation. The study is statewide and does not specifically account for the County’s two construction demolition debris recycling operations, nor its proximity to many recycling centers including the intermediate processing facility in Carol Stream. Roughly one-third of the municipalities that provided commercial recycling data as part of the 2016 survey, reported a rate of approximately 21%. A more accurate combined recycling rate for DuPage County is 30%, an average of the reported residential and commercial recycling rates.

#### 3.1 Municipal Contracts

The County continues to collect data on individual municipal contracts to waste and recycling. Appendix A summarizes the waste and recycling information compiled as part of the County’s Solid Waste & Recycling Annual Report for 2016. The data found that all communities in DuPage County offer recycling services to residents. There are variations in how the service is provided and whether the service is extended to commercial and multi-family customers. In recent years, many municipalities have expanded their recycling collection services through one-day or seasonal collection events for non-curb-side recyclable items (Figure 2).

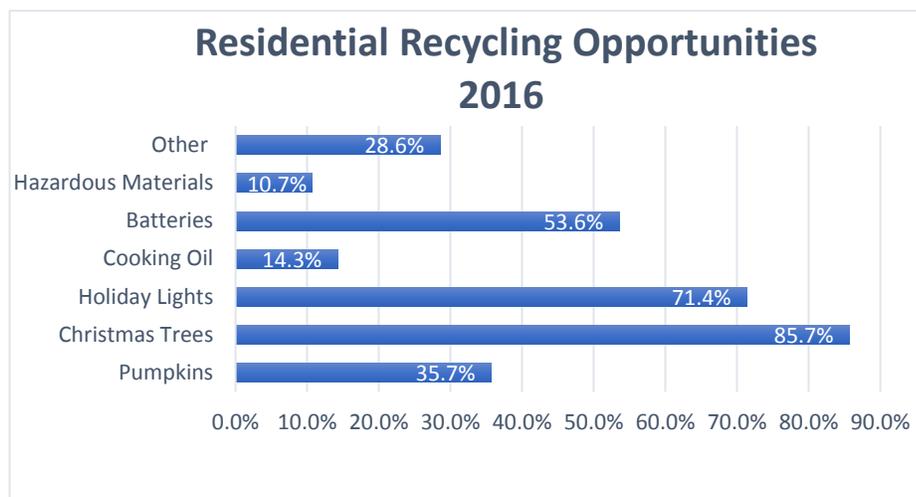


Figure 2

Although commercial waste franchises are not typically found in DuPage County there are a few municipalities that maintain these agreements, the Village of Addison, the Village of Lombard and the City of Oakbrook Terrace. The commercial waste franchise agreement cover businesses and multi-family structures waste and recycling services. The Village of Addison additionally included residential dumpster rental in the waste hauling contract and residents must utilize the Village's for this service.

There are various waste hauling programs that municipalities can utilize. One model offers a flat monthly rate for specified container size and other options include what is known as pay as you throw or volume based. There are pros and cons to both programs. While volume based offers a reduction in costs for those generating less waste, it has been shown to increase contamination in recycling bins. A flat rate program can keep average costs lower due to the known revenue for the haulers. The City of Wheaton recently launched a newer model program utilizing RFID tags for waste and recycling. Each community customizes the expenditure in accordance with their priorities ranging from price to easy access to recycling services. The County will continue to review annual data from the local governments in an effort to provide best practices in the future.

### **3.2 Multi-Family Recycling**

In 2015, the County met with multiple waste haulers to discuss efforts to expand recycling opportunities in multi-family buildings. The discussion and emphasis mirrored that of the recycling industry that contamination rates had increased in single-stream recycling. The County shifted its focus to develop better outreach materials about what can and cannot be recycled. This remains a priority as better recycling yields equate better economic value and recovery rates.

Additionally, at the meeting it was noted that providing recycling services in multi-unit tenant buildings requires consistent ongoing education to address new tenants. Transporting items to shared recycling bins is also challenging for residents to maintain a recycling container within limited space dwellings. Recycling is easily contaminated when residents are not educated on procedures or when waste bins are filled to capacity and tenants utilize the recycling containers erroneously. Recycling can be an additional cost, but can be offset as recycling can reduce waste pickups. Some communities have added waste hauling and recycling services for multi-family buildings to contracts and others have mandated that haulers offer recycling in all waste contracts.

Outside of curbside recycling options, drop-off centers are an outlet for recycling when residing in a multi-family building. The Waste Management DuPage County Recycling Center drop-off center in Carol Stream is available to all residents while the recycling centers in Addison and Naperville are limited to residents within their boundaries. The County has reviewed the viability of additional drop-off centers however, the staffing and financial commitment cannot be secured at this time.

### **3.3 Construction & Demolition Debris Recycling**

Due to its volume of the waste stream, construction and demolition debris recycling is an option to reduce landfilled waste. The County is unique in that it is currently home to three construction and demolition debris recycling sites which are able to process thousands of tons of debris that would be disposed of as a waste otherwise. This type of landfill diversion is being encouraged with a new County effort to educate construction contractors and residents of these local recycling opportunities.

Construction and demolition debris recycling has seen advantageous changes in recent years, as roofing shingles have been approved as an ingredient in road construction. Legislation mandating the recycling of

roofing asphalt shingles was enacted for sites outside a specified distance of a landfill. In contrast, construction wood has experienced some fluctuation and is currently more difficult to recycle. The wood can be utilized for wood chips, mulch, and road base in landfills and has intermittently been used as biomass fuel for electricity generation. There has been a shift in the construction industry to generate less waste material through the use of pre-fabricated items that do not require any trimming therefore do not create waste.

### **3.4 Household Hazardous Waste**

Since the last solid waste plan update, 2012, the City of Naperville relocated the Household Hazardous Waste Facility to their Environmental Collection Campus next to the City's Public Works facility. The transition was made to simplify and consolidate recycling for residents. The new facility reported a significant increase in participation during the first year of operation. In 2016, the site collected an additional 67,000 gallons of household hazardous waste. The City reported that in 2016 there were over the 20,766 drop offs of which 12,594 were from DuPage. As partially funded through the Illinois Environmental Protection Agency, the facility is open to all Illinois residents and the City of Naperville receives financial support from DuPage, Kane and Will counties and the City of Aurora.

Residents have other opportunities to dispose or recycle specific sectors of household hazardous waste. The City of Addison has partnered with a local business to recycle various types of batteries from their residents. Other items that are collected by businesses include compact fluorescent bulbs, paint, automotive fluids, fire extinguishers, propane tanks. The County publishes an Online Recycling Guide to assist residents in locating these recycling services. SCARCE, through the County's environmental education contract and with private grant funding, has worked with various entities to launch eight permanent, used cooking oil collection sites. These collections are augmented by communities hosting one-day collection events following holidays like Thanksgiving. The recycling of cooking oil is beneficial in that it can be made into a new fuel source. It also reduces the amount of cooking oil and grease poured down drains causing blockages in the sanitary system and treatment plants.

Waste Management, Inc. recently launched At-Your-Door Special Collection<sup>SM</sup> service which has been added into several municipal contracts and provides another option for communities to safely dispose of household hazardous waste. The company offers pick up service for household, automotive and garden chemical items as well as specified electronics and small battery recycling.

### **3.5 Electronics Recycling**

Starting January 1, 2012 many categories of residential electronics were banned from Illinois landfills. Currently there are 17 items that cannot be placed in with household refuse. DuPage County has been working with electronics recyclers to ensure that consumers have access to recycling sites. The program has struggled to remain sustainable as the manufacturer funded programs are limited and/or reduced and recycling markets for the materials are deemed volatile. Nationwide, many recycling companies struggle to keep up with demand and maintain steady outlets for the hard to handle cathode ray tube devices that have lead in the glass screen. Several companies have been forced into bankruptcy and others have been fined for the improper stockpiling and storage of the devices<sup>2</sup>.

In 2016, the County pursued a system using a recycling fee for the harder to handle items and relaunched two weekday collection sites and two collection sites that are open one Saturday per month, both week day and

---

<sup>2</sup> Resource Recycling, *Closed Loop execs ordered to pay millions in Ohio*, Bobby Elliot, August 8, 2017

Saturday programs are staffed by the recycler<sup>3</sup>. These are conducted through valuable partnerships with the municipalities Burr Ridge, Lisle, Wheaton and Naperville. These communities have voluntarily participated and have agreed to accept items from residents throughout the County.

The Electronic Products Recycling and Reuse Act was significantly amended in 2017 and mandated a specified number of collection sites in counties based upon population density. The changes are effective starting January 1, 2019 and the County of DuPage is expected to receive 5 collection sites. The electronics manufacturers or a manufacturer clearinghouse will be working with Illinois counties to identify the locations, hours, and other details for collection sites.

The County continues to provide information and outreach materials on electronics recycling through flyers, social media, newsletters, advertising, the online recycling guide and the website. A map of locations was developed to display all available recycling options as well as aid in strategic planning of future sites.

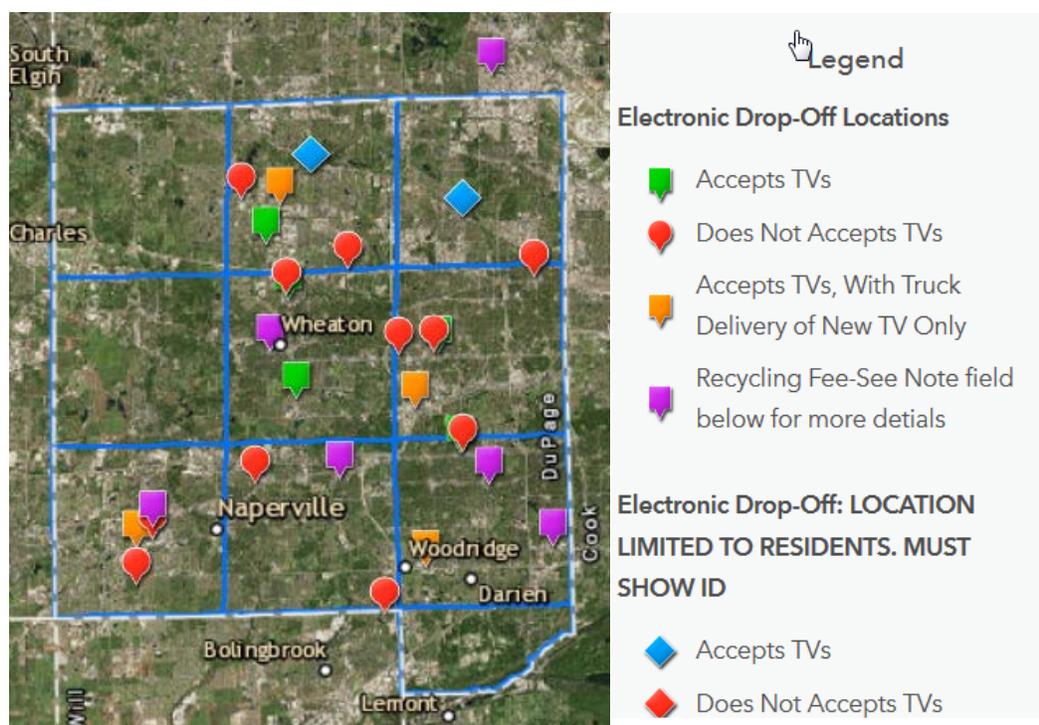


Figure 3: Map of Residential Electronics Recycling Locations in DuPage County

### 3.6 Sharps/Needles

Sharps remain a difficult item to manage in the waste stream. While the Illinois EPA allows households to place needles in a puncture proof container for landfill disposal, this is not the preferred method. Despite several medicine drop-off locations across the County, these sites cannot accept sharps through their programs. Residents are relegated to purchasing a mail back container for safe disposal or find a local sharps drop-off of which there are few in the County. The waste and recycling industry identifies sharps as a hazard when placed in recycling containers and continues to work on educating and restricting residents from disposing of sharps in this fashion.

<sup>3</sup> The Wheaton Saturday collection is staffed by the recycler and local volunteers who desired to remain part of the collection site program.

While it is a smaller portion of the waste stream, sharps are an item that merits consideration. The U.S. EPA estimated that approximately 8 million people in the U.S. use varying types of sharps or needles in the home<sup>4</sup>. They further conclude that this leads to the need for disposal of 3 billion sharps. The City of Westmont included a sharps drop-off kiosk in their municipal waste contract issued to Waste Management. The Village of Lisle offers a drop off point with the Rx Box at the police station for residents and the Glenside Fire District recently launched a collection that is free for residents and for a small fee will accept the needles from residents outside their district. These proactive approaches are commendable and are encouraged.

Some waste companies including Republic Services and Stericycle offer mail back programs for a fee. Waste Management Inc. offers both a mail back program and a sharps drop box collection to communities as well.

### **3.7 Special Collections/Recycling Events**

For many years, DuPage communities, schools and churches have been encouraged by SCARCE, through the County's environmental education contract, to host one-day recycling events. The recycling opportunities vary at each event and encompass items from keys to scrap metal to furniture and pet supplies. More recently, document shredding services have been added to the events. Several communities have worked with their local bank to host document shredding events and the County has provided financial support to communities as well since 2015.

There are several businesses and non-profits that provide recycling services throughout the year. The County provides these opportunities in an online recycling guide by waste category. Communities are encouraged to provide links to the page which can be easily and regularly updated. Residents without access to the internet are encouraged to contact the county via phone for inquiries.

### **3.8 Landscape Waste and Food Scraps**

Diversion of landscape waste has been a statewide priority since 1990 when the waste was banned from Illinois landfills. DuPage County encourages the composting or reuse of landscape waste and prohibits the burning of the waste for disposal in unincorporated areas. Waste-to-energy has been proposed however, businesses have not yet identified economical model for this area.

In a comparison of landfilled commodities from 2008 to 2014, there was a significant uptick in the amount of food scraps.<sup>5</sup> Curbside collections have seen a rise in popularity with several large waste haulers providing seasonal service in conjunction with their traditional landscape waste. Communities currently with a voluntary curbside food scrap collection include; Glen Ellyn, Naperville, and Wheaton. In addition to the curbside collections, Lombard provides alternative funding to support backyard composting of food scraps. This increase and interest in food scrap composting will assist with diverting this commodity from the current residential waste stream.

In response to this measured increase statewide, the Illinois Food Scrap Coalition ("Coalition") was formed as a statewide effort to divert food scraps from landfills. DuPage County is a founding partner with the Coalition and has staff that participate on the Executive Board. In 2017, the group published the *Economic Impact and Market Study Report: Elements of the Case for Advancing Food Scrap Composting Industry and the Link to*

---

<sup>4</sup> *Community Options for Safe Needle Disposal*, U.S. EPA, October 2004

<sup>5</sup> Comparison of 2008 and 2014 Illinois MSW Landfilled Commodity Materials, Figure 5-2 within the Illinois Commodity/Waste Generation and Characterization Study, 2015.

*Building Illinois' Local Food Economy.* The group's study was comprehensive and included, among the items, an extensive review of current practices, recommendations, tonnages, market flow and interviews with stakeholders. The recommendations were numerous with several using fee incentives and grant programs to encourage food scrap composting. Of particular notice was the inclusion of a proposal to add food scraps to the landfill landscape waste ban. The study does elaborate that a phased-in approach which includes development of infrastructure would be the most successful roadmap. The study explains that there is low demand for compost which stalls industry development. The group proposes among other things cost-sharing, cooperative purchasing, use in transportation projects and the development of financial incentives. Additionally, the Coalition received grant funding from the State of Illinois and other private funding sources including the Chicago Community Trust for programs including We Compost a free recognition program for entities choosing to compost food scraps in the State of Illinois.

There are limited locations where food scraps can be composted within range of DuPage County. Waste Management, Inc. has a permitted landscape waste and food scrap composting site in Romeoville and Midwest Compost, LLC has locations in West Chicago and Elgin that are permitted to accept and transfer food scraps with yard waste. Further from the County are two additional composting facilities that also accept food scraps for composting - Green Organics in Bristol, IL, and Compost Supply in Newark, IL. The seasonality of collecting the material with landscape waste reduces the impact of the service but this obstacle may be resolved if digesters are utilized. There are discrepancies between the definition of food scrap and what is typically accepted by organic compost sites. Industry members are advocating to modify the definition by removing references to packaging, utensils and food containers that create issues during the composting process.

### **3.9 Recycling and Contamination**

Recycling conserves energy and natural resources and can create jobs. Recycling has become part of the population's daily lives. It has become an every changing industry with many of the changes yielding a negative impact. The switch to single stream began to harm recycling with an additional degradation when carts were introduced. Ever increasing types of packaging has also had an effect. It has become increasingly difficult to identify what is accepted in the recycling bin and this confusion may be leading to apathy about sorting recyclables.

In addition, the recycling stream is changing. The U.S. EPA found an increase in consumption of plastic bags, sacks, wraps, corrugated containers and a reduction in newspaper. While recycling companies have perpetually seen changes in the streams, the newer trend to reduce the plastic or other resource of a product like a plastic bottle, have increased recyclers costs as it takes more to get a ton of material. As discussed below, many recycling companies are trying to simplify the recycling stream to maintain the quality, value and predictability of the items collected.

Waste Management found in 2013 that on average 16% of inbound recycling is non-recyclable. They estimate the cost of the contamination to be approximately \$140/ton which is a 20% increase over two years. The company has launched a Recycle Right campaign that attempts to return to the basics of recycling by encouraging the recycling of valuable items. Resource Management, a local recycling company, reported a nearly 3-fold increase in contamination since 2001 reaching more than 21% in 2017. They recommend several strategies that can aid in the reduction of contamination including developing programs where the local government is invested in a program's success. David Biderman, CEO of Solid Waste Association of North America (SWANA) explained in a January 27, 2016 Waste 360 article that communities are "unknowingly causing the increases by allowing residents to clog up the recycling waste stream with non-recyclable components". He goes on to say that it's "really more important for the individual customer to keep

out contaminants... the processing facilities are seeing a substantial amount of non-recyclable waste thrown in or with waste and it costs time to remove that material – thus causing facilities to charge the haulers more. Those rates get passed on to the cities”. Given these rising costs, many in the industry are advocating for a shared solution with haulers and governments. The City of Chicago recently launched a tagging program where recycling carts can be rejected by the hauler until unacceptable items are removed. Tracking of recyclables to specific routes can aid in determining sources of contamination so that a follow up communication can be made. A multi-faceted approach may aid in stabilizing recycling costs and insulate consumers from future price increases.

Another recent impediment to recycling was China’s implementation of what has become known as the National Sword. In a 2017 statement to the World Trade Organization, the country heightened restrictions on imports of recycling commodities including but not limited to mixed paper, textiles and several types of plastic that are scheduled to take effect in early 2018. China placed restrictions on contamination at percentages projected to be unattainable. Many agencies are focusing on expanding domestic markets but market saturation is expected to take place while businesses broaden. SWANA and industry representatives are to starting to have conversations to educate consumers that there is a real cost to recycling - labor, equipment, transportation etc.

The impact of the impending policy has already forced some communities in the U.S. to reduce recycling or accept disposal waivers. With contamination at the forefront of the National Sword, working to limit unacceptable items has become imperative. This Plan Update is recommending that the County continue to expand outreach about contamination in recycling. The County has developed online information as well as postcards that try to simplify what goes in a recycling bin. Staff will provide technical support to communities and haulers on an as-needed basis.

#### 4.0 EXISTING FACILITIES & CAPACITY

The Illinois Environmental Protection Agency annually reports on the status of waste facilities within the State. The 2016 Illinois Landfill Disposal Capacity Report<sup>6</sup> stated that there were 38 permitted landfills in Illinois receiving a total of 46,750,820 cubic yards of solid waste. These landfills have a remaining combined available disposal capacity of 983,948,083 cubic yards. At the current disposal rate, these landfills will have a cumulative life expectancy of approximately 21 years. However, landfill capacity and life expectancy may vary year-to-year based on a number of factors, including waste disposal rates, landfill expansion, and the construction of new landfills.

**Landfill Capacity and Disposal Volume by Region**

Region Number	Geographic Area	Number of Landfills	Capacity (yd <sup>3</sup> )	Disposal Volume (yd <sup>3</sup> )	Life Expectancy (yrs)
1	Northwestern Illinois	7	280,751,604	16,399,306	17.1
2	Chicago Metropolitan	5	90,108,208	7,817,946	11.5
3	Peoria/Quad Cities	6	129,398,168	4,692,903	27.6
4	East Central Illinois	7	170,783,372	7,313,074	23.4
5	West Central Illinois	4	35,430,276	1,670,290	21.2
6	St. Louis Metropolitan East	4	194,395,976	7,233,307	26.9
7	Southern Illinois	5	83,080,479	1,623,994	51.2
<b>Total</b>		<b>38</b>	<b>983,948,083</b>	<b>46,750,820</b>	<b>21</b>

<sup>6</sup> Illinois Environmental Protection Agency 2016 Illinois Landfill Disposal Capacity Report

Table 5 below provides a snapshot of existing facilities that handle waste within DuPage County. The first ten facilities listed operate under permits from the Illinois Environmental Protection Agency. Two facilities are construction and demolition debris recycling centers and are allowed to operate without IEPA permits under the conditions set forth 415 ILS 5/22.38. The third C&D recycling facility was required to obtain a permit when the statute was modified.

Name of Facility	Location	Waste Stream	Permitted/Avg. Capacity/Day
<b>A.K. Mulch</b>	Villa Park	Landscape waste	40 yd <sup>3</sup>
<b>Amber Solvent</b>	Addison	Fountain solution	
<b>Anderson Landscape Supply</b>	Elmhurst	Landscape waste	260 yd <sup>3</sup>
<b>Bensenville Landfill*</b>	Bensenville	Closed construction and demolition debris	n/a
<b>DuKane Transfer Facility</b>	West Chicago	Municipal solid waste Landscape waste	3,000 tons
<b>DuPage Yard Waste</b>	West Chicago	Landscape waste Food scrap pending	400 yd <sup>3</sup>
<b>Greene Valley Landfill*</b>	Naperville	Closed municipal solid waste landfill	n/a
<b>Heritage Crystal Clean/Recycle Technologies</b>	Wood Dale	Anti-freeze recycler	22,700 gal/day
<b>Mallard Lake Landfill*</b>	Hanover Park	Closed municipal solid waste landfill	n/a
<b>Neil's Hauling/Molenhouse</b>	West Chicago	Construction and demolition debris	Not specified
<b>Recycle America/Waste Management DuPage County Recycling Center</b>	Carol Stream	Papers, cardboard, plastic bottles, aluminum cans, steel cans etc.	Not specified
<b>Regional Household Hazardous Waste Facility</b>	Naperville	Household hazardous waste	Not specified
<b>St. Francis Pet Crematory</b>	Wood Dale	Animal carcass storage & transfer	Based on storage capacity
<b>Stericycle</b>	Itasca	Potentially Infectious Medical Waste Transfer & Storage	14,000 lbs.
<b>Wastebox</b>	Lemont	Construction & demolition debris	Not specified
<b>Western DuPage Landscaping Inc.</b>	Aurora	Landscape Waste	
<b>West DuPage Recycling &amp; Transfer, Inc.</b>	West Chicago	Construction and demolition debris	Not specified

Table 5: Existing Solid Waste Management Facilities in DuPage

In addition to these recycling centers, recent legislation allowing the collection and composting of food scraps/organics will soon impact waste within the County. Several businesses are leading the effort to use composting as an alternative to disposal. At this time, commercially collected organics are composted outside of the County. This has impacted how quickly and economically food scraps can be removed from the waste stream. Due to the absence of a local site collecting food scraps cost becomes a factor as there is a need to run an additional truck route. The County would benefit from more local facilities that can meet the site location requirements.

## 4.1 Waste Disposal Capacity

As estimated in Section 2.4, DuPage County generates 1,475,604 tons of waste per year. The average of recent recycling data has estimated the recycling rate to be 37% which leaves approximately 929,431 tons of waste in need of disposal annually. The DuKane transfer facility is permitted to accept up to 3,000 tons per operating day so it can move 939,000 tons/year. However, service areas must be considered as well as the market forces of private sector waste hauling entities. Large regions of the County are not optimally served due to the lengthy transportation routes which lead to increased costs and air emissions. To address this the County of DuPage will consider new or expanded facilities handling, treating and recycling waste on a case by case basis. Any new proposed pollution control facilities located in unincorporated areas are subject to the siting criteria stipulated in 415 Illinois Compiled Statutes 5/39.2 as well as Chapter 25 of the County's Code.

## 5.0 MOVING FORWARD

Diversion and sustainability continue to be at the forefront of planning and implementing solid waste recommendations. To guide the public and decision makers, U.S. EPA developed a Waste Management Hierarchy<sup>7</sup>, which is recognized by many entities in solid waste planning as the preferred order of waste disposal.



Figure 4: U.S. EPA Waste Management Hierarchy

The top tier, source reduction and reuse is described by the U.S. EPA to include reuse, donation, purchasing in bulk, package reduction, product redesign, toxicity reduction. Several industries have focused significant efforts on product redesign and product sustainability and are noted by third party certifying bodies or designations including but not limit to Cradle to Cradle, Forest Stewardship Council<sup>TM</sup>, Green-e, Green Seal<sup>TM</sup>, PCF (Processed Chlorine Free) and Level® by BIFMA. Information on these products, services or organizations are widely available through various outlets. The County assists with providing information as requested including education on this and other topics through a professional services agreement. The County supports reductions and reuse through various local entities to minimize the overall waste entering Illinois landfills. Education and outreach will continue to be provided to residents, schools, organizations, businesses and other interested individuals on this and all aspects of waste management.

<sup>7</sup> U.S. Environmental Protection Agency <https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy>

Once all efforts to reduce and reuse have been made, recycling or composting are considered the next best use. Recycling has seen a significant amount of change over the last decade with volatile market values, contamination issues and shrinking end users. Although there continues to be uncertainty in the recycling arena these higher level issues have not deterred municipal waste contracts from including recycling.

The County recognizes the local challenges of contamination and access as limiting factors in expanding or increasing programs or the diversion rate. High rates of unacceptable recyclables harm both the recycling and composting industries and cause significant strain on equipment and personnel. Educational and marketing efforts are underway to assist with addressing this challenge and will aid in the understanding of recyclable commodities, specifically those identified to be at a lower recovery rate in the County; glass bottles, jars, aluminum beverage containers, and ferrous containers. Composting continues to grow as evidenced by the Village of Glen Ellyn's contract to include food scrap pick-up year round. Another area of recycling, construction and demolition debris, is gaining exposure due to green building which requires the reuse and recycling of materials. This sector was identified under the County's Strategic Plan as a priority waste reduction category and as such the County is launching an outreach effort that supports the displacement of this waste from landfills both through recycling and reuse.

The first two categories of waste management hierarchy are easily accessed by the public and opportunities abound within and around the County to divert waste using any of the above methods. Energy recovery is less accessible, but has been achieved through alternative technologies including waste-to-energy and waste-to-fuel developments. As projects arise, these opportunities will be assessed to ensure all other preferred avenues have been explored. Previous studies have found that low landfill tipping fees can be a large barrier to these emerging technologies. As landfill space decreases more opportunities in the energy recovery sector may become available. Other influences that could hasten the development of these technologies include, raising transportation costs, land value, alternative energy portfolios and energy prices.

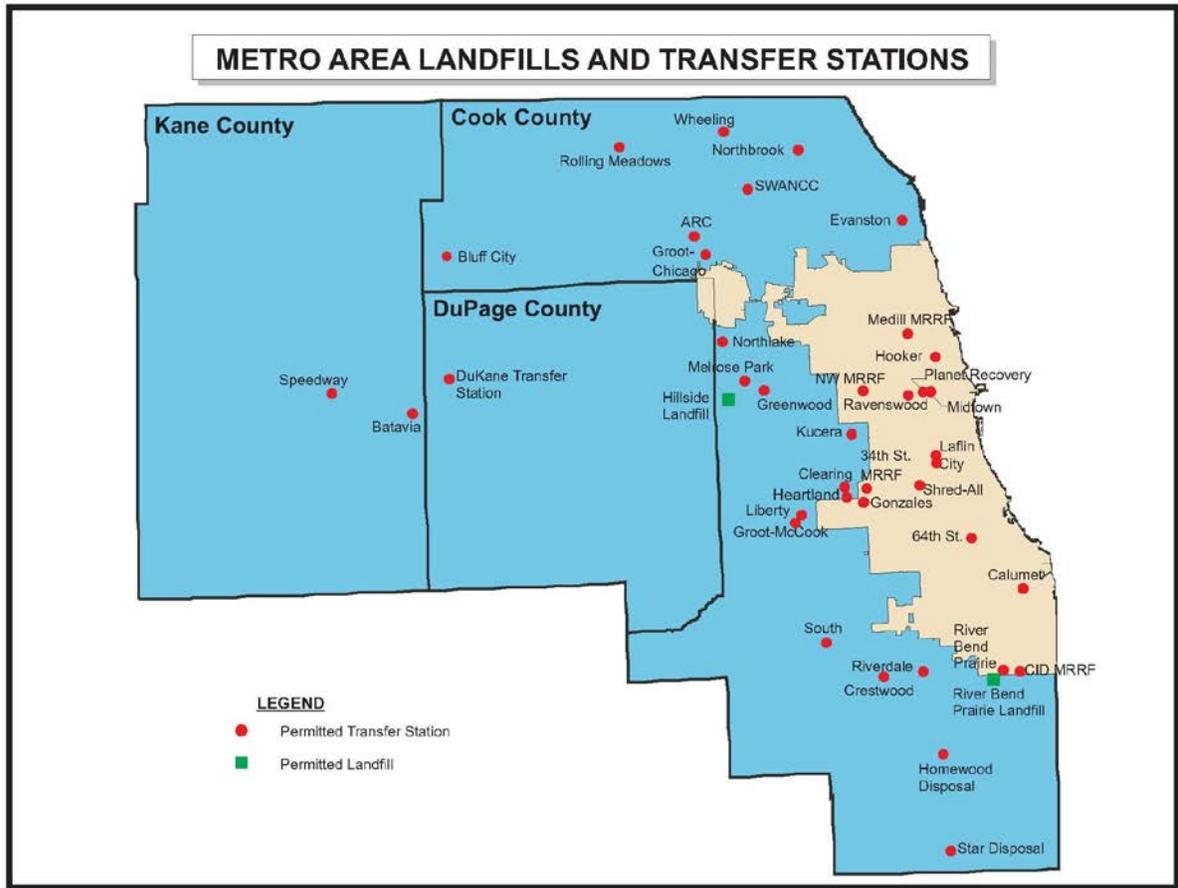
Landfilling continues to be a final option after all other preferred methods are exhausted. Illinois' abundance of landfill sites creates difficulties to the more complicated or energy expending processes of reusing, recycling or recovering energy, however, this five year update continues to focus on sustainable modes of disposing of the nature "things" we consume and collect. Legislation has provided regulatory language which has assisted with providing more incentive for reuse or recycling, and more recently alternative energy through the Future Energy Jobs Act (FEJA,) which may result in an increase the energy recovery sector. The County will continue to monitor and participate, as needed, on legislative efforts that might impact the waste stream. Other recent legislation has evolved around local permitting authority, electronics recycling, commercial franchising, food scrap composting and solid waste planning. Staff will continue to participate in regional and statewide conversations in addition to monitoring pending legislation. DuPage County will continue to provide technical assistance and leadership in all sectors of solid waste management.

## APPENDIX A

### 2016 Municipal Waste & Recycling Data

	Refuse Tonnage	Recycled Tonnage	Landscape Waste Tons	Total Recycled	Total Waste	Recycling Rate
<b>Addison</b>	10547	2386	2074	4,460.00	15,007.00	30%
<b>Bartlett</b>	12919	4491.53	2509.61	7,001.14	19,920.14	35%
<b>Bensenville</b>	5553.32	1242.26	1897.89	3,140.15	8,693.47	36%
<b>Bloomingtondale</b>	7198.95	2084.84	588.87	2,673.71	9,872.66	27%
<b>Bolingbrook</b>	21862.41	6780.04	4811.8	11,591.84	33,454.25	35%
<b>Carol Stream</b>	9639.43	3534.51	13.58	3,548.09	13,187.52	27%
<b>Clarendon Hills</b>	2176	1092	525	1,617.00	3,793.00	43%
<b>Darien</b>	4536.35	2546.26	766.64	3,312.90	7,849.25	42%
<b>Downers Grove</b>	11708.75	5965.78	1975.22	7,941.00	19,649.75	40%
<b>Elk Grove Village</b>	10467	3904	1204	5,108.00	15,575.00	33%
<b>Elmhurst</b>	12561.2	5421.46	1924	7,345.46	19,906.66	37%
<b>Glen Ellyn</b>	6946.6	3526.59	2420.07	5,946.66	12,893.26	46%
<b>Hanover Park</b>	11251	2455	1126	3,581.00	14,832.00	24%
<b>Hinsdale</b>	5327	2428	563	2,991.00	8,318.00	36%
<b>Itasca</b>	3272.32	970.35	782.43	1,752.78	5,025.10	35%
<b>Lisle</b>	8204	2898	521	3,419.00	11,623.00	29%
<b>Lombard</b>	10626	4091	1923	6,014.00	16,640.00	36%
<b>Naperville</b>	37405.1	15655.08	6591	22,246.08	59,651.18	37%
<b>Oak Brook</b>	2995	1221	130	1,351.00	4,346.00	31%
<b>St Charles</b>	7231.34	892.95	892.95	1,785.90	9,017.24	20%
<b>Warrenville</b>	2039	1116	335.5	1,451.50	3,490.50	41%
<b>West Chicago</b>	5756.05	2819.54	773.77	3,593.31	9,349.36	38%
<b>Westmont</b>	4265	1915	619.2	2,534.20	6,799.20	37%
<b>Wheaton</b>	17164	6592	3657	10,249.00	27,413.00	37%
<b>Willowbrook</b>	1033.31	548.62	34.95	583.57	1,616.88	36%
<b>Winfield</b>	2034	856	449	1,305.00	3,339.00	39%
<b>Wood Dale</b>	4386	1145	834	1,979.00	6,365.00	31%
<b>TOTAL/AVERAGE</b>	<b>239,105.13</b>	<b>88,578.81</b>	<b>63,67.92</b>	<b>80,853.41</b>	<b>234,009.56</b>	<b>34%</b>

**APPENDIX B**



2007 Shaw Environmental Report completed for the County of DuPage

---

**APPENDIX 8-I**

**DUPAGE COUNTY SW PLAN  
CONSISTENCY LETTER**

---



**DUPAGE  
COUNTY**

Building  
Division

Zoning &  
Planning Division

Environmental  
Division

## BUILDING & ZONING DEPARTMENT

630-407-6700  
Fax: 630-407-6702

[www.dupageco.org/building](http://www.dupageco.org/building)

April 23, 2020

City of West Chicago  
Attn. Michael Guttman  
475 Main Street  
West Chicago, IL 60185

Re: Lakeshore Recycling Systems Application for Siting Approval  
for a Pollution Control Facility

Dear Mr. Guttman,

DuPage County has received notification that Lakeshore Recycling Systems (LRS) will be submitting a local siting application for a municipal solid waste transfer station in the City of West Chicago. LRS has requested that I review the proposed site for consistency with the DuPage County Solid Waste Management Plan pursuant to 415 ILCS 5/39.2. In my role as an Environmental Specialist II for the County, I am responsible for overseeing the Plan and solid waste management as it relates to the county as a whole.

DuPage County adopted its initial countywide Solid Waste Management Plan in 1991 with subsequent updates completed intermittently in accordance with the Solid Waste Planning and Recycling Act (415 ILCS 15/). The latest plan update (attached) was adopted by the County Board in 2017 and included Section 4.1 which addresses Waste Disposal Capacity. The document finds that service areas of existing facilities be considered as well as market forces. It observes that the County lacks disposal capacity for the waste generated within the borders and that additional pollution control facilities may be needed but will be considered on a case by case basis. The proposed pollution control facility appears to be consistent with the aforementioned Solid Waste Management Plan Five Year Update (2017).

If you have any further questions regarding the proposed application as it relates to the DuPage County Solid Waste Management Plan, please do not hesitate to contact me at (630) 407-6753.

Sincerely,

Joy Hinz  
Environmental Specialist