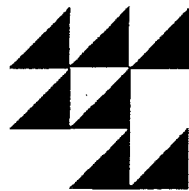


**CALENDAR YEAR 1991**

**ABATEMENT PROGRESS  
REPORT  
FOR THE TWIN CITIES  
METROPOLITAN  
AREA**

**Report of the Metropolitan Council  
to the  
Legislative Commission  
on  
Waste Management**

November 1992



Metropolitan Council  
Mears Park Centre Building, 230 East Fifth Street, St. Paul, Minnesota 55101  
612 291-6359

Printed on Recycled Paper

Publication No. 523-92-115



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The Metropolitan Council coordinates the planning and development of the seven-county Metropolitan Area. The Council is authorized by state and federal laws to plan for highways and transit, sewers, parks and open spaces, airports, land use, air and water quality, waste management, health, housing and aging.



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## ABOUT THIS REPORT

The *Abatement Progress Report* is required by the Waste Management Act of 1980, as amended, Minn. Stat. 473.149, subd. 6, which states:

The council shall report on abatement to the legislative commission on waste management by November 1 of each year. The report must include an assessment of whether the objectives of the metropolitan abatement plan have been met and whether each county and each class of city within each county have achieved the objectives set for it in the council's plan. The report must recommend any legislation that may be required to implement the plan. If in any year the council reports that the objectives of the council's abatement plan have not been met, the council shall evaluate and report on the need to reassign governmental responsibilities among cities, counties, and metropolitan agencies to assure implementation and achievement of the metropolitan and local abatement plans and objectives.

The report also satisfies the requirements of Minn. Stat. 115A.551, subd. 4, which requires the Council to monitor the progress of each county toward recycling 35 percent of total solid waste generation by December 31, 1993, and 45 percent by July 31, 1996, exclusive of yard waste composting.

This is the eighth annual *Abatement Progress Report* to the Legislative Commission on Waste Management. The report follows the format from the previous year and often repeats text that remains applicable to the more recent data reported. Information contained in this report covers the period January 1, 1991, through December 31, 1991. Additional information covering the period between January 1, 1992, through June 30, 1992, is presented in Appendix A. A calendar year report format has been adopted because fiscal year information is often difficult to compare with the data in most other reports. Additionally, the earlier report schedule the Council will initiate next summer to coincide with the new requirements for the state Solid Waste Policy Report will preclude reporting on the first six months of the year.

This report contains a section addressing the restricted disposal of unprocessed waste, required by Minnesota Stat. 473.848, subd. 4, which states:

The council shall include, as part of its report to the legislative commission on waste management required under section 473.149, an accounting of the quantity of unprocessed waste transferred to disposal facilities, the reasons the waste was not processed, a strategy for reducing the amount of unprocessed waste, and progress made by counties to reduce the amount of unprocessed waste. The council may adopt standards for determining when waste is unprocessable and procedures for expediting certification and reporting of unprocessed waste.

The eight major sections contained in this report include: 1) waste generation; 2) waste composition; 3) waste reduction; 4) recycling; 5) centralized processing; 6) implementation of designation; 7) land disposal; and 8) county reports. Each section contains or summarizes the most recent data available

on the subject, the issues raised by the data, and the conclusions reached. Detailed information about recycling programs reported by each county and each city within the county is contained in Appendix B. Data from the seven metropolitan counties, the Metropolitan Council and its 1991 solid waste policy plan are the basis for this report.

In even-numbered years, the *Abatement Progress Report* is required to include a report on the costs and financing of the regional solid waste management system. This component of the report has been printed separately as the "1991 Facilities Cost & Finance Report for the Twin Cities Metropolitan Area."



# SUMMARY & CONCLUSIONS

## Waste Generation

The Metropolitan Council projected that the seven-county Metropolitan Area would generate 2,800,000 tons of mixed municipal solid waste (MSW) in 1991, a 1.61 percent increase from the 1990 projection. The quantity of mixed solid waste reported as managed by metropolitan counties in the region was 2,599,000 tons-- seven percent less than the Council's generation forecast for 1991. Incorporating an estimate for unreported disposal in landfills outside the Metropolitan Area, the Council concludes that 2,723,800 tons of MSW was managed. The MSW stream is only a portion of the total solid waste generated in the region.

The Council's current projections assume that state, regional, local and private initiatives are moderating the growth in the waste stream. Recessionary economic conditions appear to have magnified this contraction since waste management reported by counties combined with the estimated land disposal outside the region leaves about three percent of the Council estimated waste stream unaccounted for. In 1994 the Council will develop new waste generation estimates for the Metro Area. The Council has adopted policies supporting weight-based fees, public education encouraging waste reduction, and a hazardous materials fee to encourage reduction in both the volume and toxicity of the waste stream.

## Waste Reduction

Waste reduction is the most preferred management option. The Council's *Solid Waste Development Guide/Policy Plan* supports and identifies a number of measures that can be taken regionally to encourage waste reduction. Among the steps recommended are weight-based fees, a toxic materials tax and an environmental protection fee to be assessed at landfills. A regional weight-based collection fee system that provides incentives for waste reduction and recycling will be evaluated further by the Council. The Council will develop specific recommendations regarding the feasibility of shifting toward a regional weight-based collection fee system. The Council has also promoted the reduction of yard waste. The Council will continue to work with state and national entities in the development of effective waste reduction strategies. The metropolitan counties are participating with the Council in regional public education efforts. The counties are also jointly working to establish household hazardous waste management programs.

## Waste Composition

Understanding the composition and characteristics of solid waste is useful both to anticipate potential issues and to design new programs that address the changing details of waste generation and disposal. The waste stream is composed of a complex variety of materials that must be considered individually when management decisions are made. The Council is currently concluding a regional waste composition study in cooperation with the Minnesota Pollution Control Agency (MPCA) to develop a better understanding of the existing regional waste stream. This study is documenting MSW composition at resource recovery and land disposal facilities during each season of the year so effective targeting of materials remaining in the waste stream can occur. The types and volumes of non-MSW waste that could have an impact on MSW management will also be documented. Current

management system and monitor the success of current programs. In hierarchical order, respectively, cost-effective reduction, recycling and composting alternatives are preferred over land disposal.

## **Recycling**

Each county has exceeded the Council's recycling goal for 1991. It seems likely that the 1993 legislative goal of 35 percent will be achieved as well. With most of the cities and townships in the Metropolitan Area providing for the collection of recyclables at curbside, it appears that the regional recycling infrastructure as envisioned in the Council's *Solid Waste Management Development Guide/Policy Plan* has been successfully developed. County efforts to ensure that recycling options are available to most residents in cities and townships have been successful.

In order to progress to the 50 percent recycling objective by 2000, volumes of recovered materials must increase. Future recycling percentage gains will have to come from enhancing existing program features. More materials should be added to the traditional cans, bottles and newspapers currently collected, with more attention given to increasing both the number of households recycling and the amounts of recyclable materials each household contributes. Same-day collection of waste and recyclables should continue to be emphasized. Commercial/industrial recycling accounted for 63 percent of the total recycling reported. The commercial/industrial volumes are generally not documented, and better methods would be needed to accurately identify these volumes. Since the Council's landfill limits are being achieved, however, the recycling estimates do not appear to be unrealistic, and requirements for better documentation are not proposed. Adding more varieties of materials to the collection system will likely require commingled collection of recyclable materials and more processing capacity in order to separate and prepare recyclable materials for market. Commingled collection will have to be carefully planned to minimize contamination problems associated with mixed materials that could offset the benefit of recovering a greater volume. The Council has identified in its policy plan the need to concentrate efforts regionally on improving markets for recyclable materials. The Council has adopted a policy to target Abatement Account monies to enhance markets for recyclable materials.

## **Centralized Processing**

The region has made great strides in the development of safe and effective waste processing facilities. Some of the remaining elements of the primary facility network identified in the regional policy plan are behind schedule, and replacement capacity may have to be located or developed in some instances. The level of rejects, residuals and ash produced by the facilities is comparable to the predicted rates planned by the counties and Council. The regional policy plan indicates a preference for managing the residuals, rejects, and ash by methods other than landfilling. For this to occur, facilities must be upgraded to manage these materials.

Additional processing capacity is needed to manage the waste that will be generated within the region. On the surface, the Council's policy plan projects that 5,040 tons per day of processing capacity will be needed. This capacity level appears to show the region will process 58 percent of the estimated 1991 MSW stream. Looking closer, part of the processing capacity in the region will be devoted to managing processed rejects and residuals. When secondary processing and waste stream growth are taken into account, the actual amount of MSW that will be processed when all planned facilities are operational is approximately 50 percent.

## **Implementation of Waste Designation**

Designation in the Metropolitan Area is working effectively for existing facilities. The facilities are obtaining sufficient waste flows and income from tipping fees to support their operation and debt service. Recent court decisions declaring state flow controls unconstitutional with respect to interstate commerce have, however, discouraged counties from initiating new facilities that would rely on waste designation for financing.

County uncertainty about the ability to successfully rely on designation to assure adequate waste and fee income at designated facilities has resulted in long time frames for evaluating exclusion requests. Delays have also been requested by the petitioners. The delays have slowed the implementation of private initiatives. Delays have diminished during the past year and no time restriction for review of exclusion requests is recommended at this time.

## **Land Disposal**

The success of recycling and resource recovery programs led to a 21 percent reduction of landfill space consumption in the Metro Area compared to 1990. This reduction may be attributed to significant increases in recycling and the recessionary period the region is currently experiencing. Export outside the region may have been a contributing factor as unlined landfills outside the region faced a deadline of January 1, 1992 for the receipt of Metro Area waste. The total MSW reported as landfilled in 1991 by the region, including outputs from centralized processing facilities, was approximately 684,200 tons. The Council, using estimates of waste disposed of outside the region, data from the Department of Revenue on the total amount of waste received at metro and nonmetro disposal facilities, and ash disposal reports, estimates that total disposal for 1991 was approximately 894,300 tons (without ash - 698,500 tons). The disposal volume was less than half the Council's disposal limit of 1,437,000 tons for 1991. The reduction is attributable to dramatic increases in recycling, waste reduction, the impact of recession on generation, and, possibly, to a larger than estimated export of materials to out-state and out-of-state landfills.

Land disposal of Metro Area MSW has fallen dramatically. Further reductions are anticipated as the counties continue to develop an integrated, regional waste management system. This integration should ensure that each component of the waste stream is managed as high in the waste management hierarchy as possible. The current capacity in metro landfills, at projected disposal rates, should last through the year 2000. If the Burnsville landfill expansion is approved, the Metro Area should have sufficient landfill capacity through 2007. To ensure that use of landfill use is reduced to the greatest extent possible, the Council is promoting a waste management fee to be collected at landfills. The fee would pay for the costs of protecting the environment from landfill contamination and encourage greater waste reduction efforts. Landfill fees that charge the generator based on where the waste was generated instead of the volume and type of material generated are not equitable. A transition may be warranted to cap the compensation to local communities for hosting a landfill and direct remaining surcharges to landfill cleanup measures like the contingency action fund and the Council's proposed environmental protection fee. The host fees are not entirely dedicated to landfill cleanup and may place local landfills at a competitive disadvantage that may lead to premature closure of important regional resources.

## County Reports

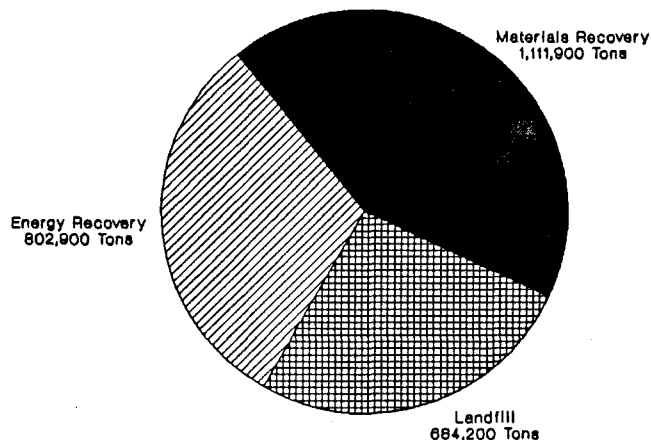
Reported disposal volumes have fallen dramatically and have achieved the Council's landfill limits. New recycling program commitments will, however, be necessary to achieve the 50 percent recovery level indicated for 2000.

Although reported land disposal volumes are well within specified limits, continued attention is warranted. County reports should provide information on ash disposal and estimate the volume of waste not sent to processing facilities prior to disposal. These requirements should be integrated with Council annual report requirements addressing the entire waste stream.

Efforts to establish processing capacity were on schedule during 1991, but have since fallen behind in three counties. The Dakota County incinerator was delayed by the MPCA. Carver and Scott counties have terminated their joint MSW composting project. The delay over permitting the Dakota project has been resolved, but recent court decisions have undermined waste designation as a tool to assure waste flows and the financial viability of the planned resource recovery facilities. The three counties are being encouraged to continue efforts to develop or contract for scheduled processing capacity and, in the interim, aggressively promote the use of reasonably available processing facilities before local waste is allowed to be land disposed. MSW composting projects in Wright County and the East Central plant in Mora are each seeking substantial waste volumes that could be supplied from the Metro Area.

Certification reporting every six months has proven to be an excessive drain on the staff resources of the counties and the Council. Annual reports would reduce the time commitment without necessarily sacrificing the capability to provide the desired oversight. Requirements for county reports to the Council should be consolidated and integrated with a single *Abatement Progress Report* from the Council to the legislature.

Figure 1  
1991 REGIONAL WASTE MANAGEMENT  
AS REPORTED BY COUNTIES



The Energy Recovery figure is calculated by subtracting residuals, rejects and excess waste from total waste receipts. The Landfill figure includes excess/unprocessed waste, residuals, rejects and ash.

# RECOMMENDATIONS

## Waste Generation

- Metropolitan counties, state agencies and the Council should develop a comprehensive strategy that quantifies on a periodic basis the region's total solid waste stream for use in future development and refinement of waste management policies and programs.

## Waste Reduction

- Weight-based waste collection fees are encouraged to establish an incentive to promote waste reduction. The provision of unlimited service at a uniform fee should be discouraged. A single fee for unlimited volume provides no incentive to reduce generation. Sometimes a single fee subsidizes collection of yard waste and reduces incentive for back yard composting. Counties should continue their efforts to implement weight-based strategies. The Council has a preference for weight-based over volume-based fees because compaction and large container sizes or limits can defeat the motive to actually reduce the amount of material generated.
- An environmental protection fee should be added to tipping fees at all land disposal facilities in the state. Funds accumulated from the fee should pay for all environmental protection costs, including the removal of toxic materials from the waste stream, and encourage generators to participate in further waste reduction efforts.
- A tax or fee should be assessed on a list of materials determined by the Minnesota Pollution Control Agency to cause a negative environmental impact. Monies accumulated should be placed in a dedicated fund used to reduce the toxicity of the waste stream.

## Recycling

- Cities and counties should continue expanding the number of materials recycled and working toward same-day recycling and MSW collection. Commingled collection of recyclables should continue to be promoted where additional advantage can be attained.

## Reporting

- Requirements for county reports to the Council should be consolidated and integrated with a single *Abatement Progress Report* from the Council to the legislature.

# REGIONAL WASTE MANAGEMENT PLAN

In September 1991 the Metropolitan Council adopted the *Solid Waste Management Development Guide/Policy Plan* to manage the region's solid waste through the year 2010. This document replaces the 1985 plan that had successfully guided the region. The policy plan lays out five goals for managing the region's solid waste system which are summarized below.

## **Goal 1**

Puts greater responsibility on waste generators to reduce the toxic materials they produce, to reduce the amount of waste they generate and to recycle.

## **Goal 2**

Strengthens economic incentives to process waste rather than dispose of it in landfills.

## **Goal 3**

Calls for the metropolitan counties to cooperatively provide for development and operation of waste facilities, thereby minimizing negative environmental effects and landfill disposal, and maximizing the recovery of energy and resources from the waste.

## **Goal 4**

Requires that the metropolitan counties develop a regional system operations plan that integrates the operations of facilities and programs to manage all of the region's waste.

## **Goal 5**

Requires that the system be managed to allocate costs equitably to waste generators, and the cost of management be paid by the generators and the revenues from the sale of energy, recyclables and compost.

The plan shows a preference among waste management methods, adopting the hierarchy in the *Waste Management Act*. Ranked first is waste reduction; second, recycling; third, composting yard and food waste; fourth, resource recovery; and last, land disposal. It sets high objectives for the region's solid waste management system. By 2000, 100 percent of the MSW and special waste will be recycled or processed to recover materials and energy. In addition, recycling objectives are set. By 1993, 35 percent of the waste will be recycled; by 1996, 45 percent and by 2000, 50 percent.

Each metropolitan county was required by the *Waste Management Act* to revise its solid waste master plan within nine months of completion of the Council's new plan. By the end of September 1992 four county master plans -- Anoka, Dakota, Ramsey and Washington -- were revised and determined to be consistent with the Council's Policy Plan. The other three were expected to be finished and under review by the Council by the end of the year. Each of the four approved master plans calls for more recycling, and relies heavily on existing or planned resource recovery facilities to manage the waste generated within its county boundaries.

Regional integration, the fourth goal of the Council's Policy Plan, was a major issue in the county master plans. The four master plans reviewed contain a proposal, written by the Solid Waste Management Coordinating Board (SWMCB), for a regional solid waste management authority created

by a joint powers agreement. The purposes of the authority are to improve the efficiency of the existing county-run system; determine the need for new solid waste management options; and site facilities if necessary. After the SWMCB sunsets in 1993, the authority would be implemented, continuing to integrate the county-run systems into a regional solid waste system.

The Council's *Solid Waste Management Development Guide/Policy Plan* will guide Council review and approval of the county master plans; county annual reports; county and municipal solid waste ordinances, permit requests, designation and exclusion requests; requests for funds under the Local Recycling Development Grant Application Program; and long-term public-entity contracts for solid waste supply and processing. The policy plan also offers guidance for direction and evaluation of expenditures from the Metropolitan Landfill Abatement Account.

Together, the Council's Policy Plan and the county master plans will help the Council, metropolitan counties, municipalities, townships, Minnesota Pollution Control Agency and the Office of Waste Management implement an economic and environmentally sound solid waste management system.





## REGIONAL SOLID WASTE GENERATION

The Council requires information from counties and regional waste facility operators in order to determine the total amount of waste generated and managed in the region. In order to obtain a complete picture of regional solid waste management, it has been necessary for the Council to obtain information from a variety of additional sources. The Council collects waste management information from municipalities, the Department of Revenue, the Minnesota Pollution Control Agency, and nonmetropolitan sanitary landfills to supplement its information needs.

The seven-county region produces nearly four million tons of solid waste annually. Solid waste includes the nonhazardous waste produced by homes and businesses, plus household hazardous waste like paints and cleaning chemicals. It also includes waste like rubble from demolished buildings, industrial slag, coal ash and junk cars.

### DATA - REGIONAL WASTE GENERATION ESTIMATES

The Metropolitan Council is charged with the development of regional solid waste projections for a 20-year planning horizon. The Council's first waste generation forecast was conducted in 1975. That forecast recommended that a 4.5 percent regional annual growth rate be used for forecasting waste generation. The 1975 forecast predicted that the region would produce 2.5 million tons of mixed solid waste in 1990. County reports indicate that 2.7 million tons of regional MSW generation was managed in 1990. Solid waste generation in the region was estimated to grow more than twice as fast as the population in recent years.

The waste generation projections in the revised *Solid Waste Development Guide/Policy Plan* (1991) were made in consultation with Cal Recovery, and Franklin and Associates. The process to establish estimates for future waste generation involved comprehensive analysis and review. The generation of MSW is expected to increase in the Metropolitan Area at an average annual rate of 1.61 percent through the year 2010. The Council estimated the MSW growth rate at 2.34 percent between 1987 and 1990. The decrease in growth rates reflects the Council's expectation that waste generation per capita and per employee will decline. The generation estimates are based on consultant analysis that residents in the Metro Area generated approximately 2.64 lbs./day, and commercial and industrial employees 7.03 lbs./day in 1987.

Thus, the Council's waste generation forecasts are policy driven in that they reflect assumptions about a higher impact from waste reduction than in the recent past. The 1991 projection is approximately seven percent higher than the amount the metropolitan counties reported as managed. This amount of difference should be expected under recessionary economic conditions. Between 1990 and 2010 the region is expected to produce approximately 40 percent more than it does now, in part because the region's population and number of jobs are increasing.

Table 1 shows the Council's forecasts of solid waste generation for the Metro Area for 1991 through 1995. The Council's 1991 projection of regional MSW generation is 2.8 million tons.

Table 1 REGIONAL FORECASTS OF TOTAL SOLID WASTE GENERATION, 1990 - 1995						
Waste Type	1990	1991	1992	1993	1994	1995
MSW	2,756,000	2,800,000	2,845,000	2,891,000	2,938,000	2,985,000
Non-MSW	799,000	811,864	824,935	838,216	851,711	865,424
Total	3,555,000	3,611,864	3,669,935	3,729,216	3,789,711	3,850,424

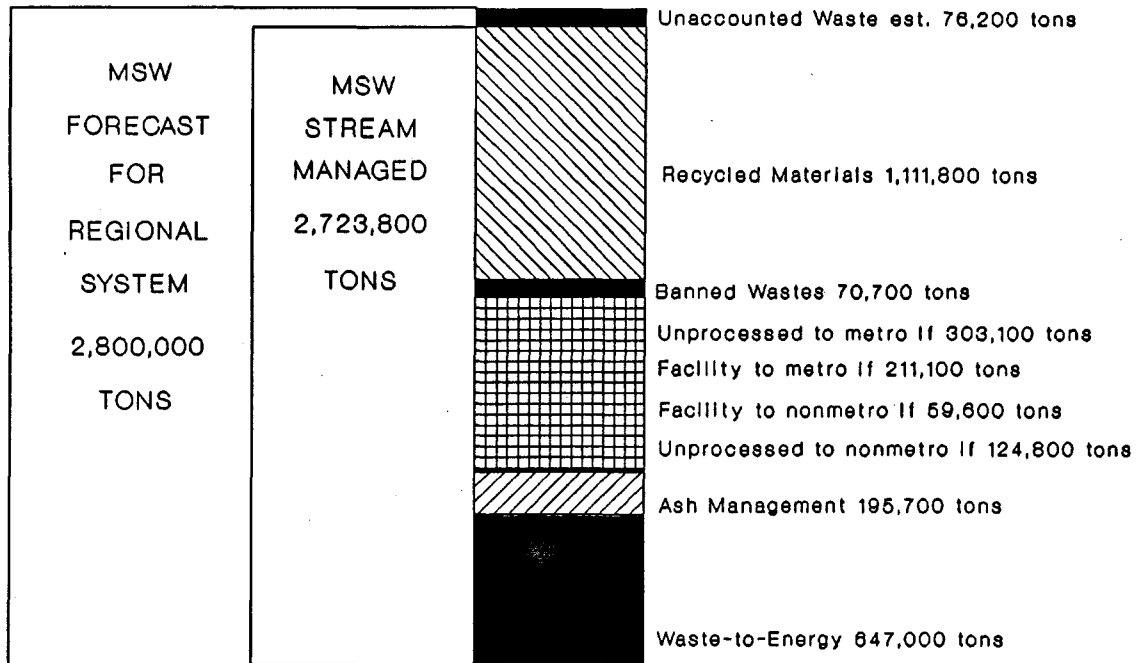
The Council's MSW projections focus on the total amount of MSW expected to be generated. The metropolitan counties identify the amount of waste managed through recycling, yard waste composting, resource recovery and land disposal. The difference between the Council's estimate and the counties's figure could be due to material not managed within these systems and/or by recessionary economic conditions that may have affected consumers' purchasing and disposal patterns. The margin of error associated with the Council's estimation process and with county reporting are undoubtedly factors as well.

The Metro Area's total solid waste stream, which the Council estimates for 1991 at 3,612,000 tons, is primarily generated from residential, commercial, industrial, agricultural and construction-demolition activities. The materials that comprise these wastes are characterized as either mixed-municipal solid waste (MSW), solid waste in addition to MSW (non-MSW), or separately managed wastes. The estimates do not include coal ash from electric power generation, auto hulks, or materials such as old pavement, which are recycled or otherwise managed outside of the solid waste system.

The non-MSW figure in Table 1 includes materials that are not defined as MSW, such as construction-demolition debris, separately managed wastes and other materials specifically banned from being collected with MSW. The projections are based on maintaining the same relative proportion of the non-MSW waste stream to the total waste generation figure.

Figure 2 details the Council's understanding of how the MSW stream reported by counties was managed. This information is based upon data received from counties, the Department of Revenue, centralized processing facilities and land disposal facilities located in and near the Metro Area.

Figure 2  
 1991 - METROPOLITAN AREA  
 TOTAL WASTE MANAGEMENT



Source: Metropolitan Council

## ISSUES - WASTE GENERATION

The Council uses numerous sources to develop its estimate of how the region's waste is managed. Those sources include: reported residential recycling tonnages from cities and counties; estimates of yard waste volumes that are managed by composting sites; county-provided estimates of commercial, industrial and institutional recycling operations; waste delivered to processing facilities as reported by the facilities; regional land disposal data reported from metro and nonmetro landfills; and consultant-developed data estimates for special wastes (banned from land disposal facilities) that are managed in the region. Knowing how much waste is produced is important for comprehensive management planning.

Answering the question of how much waste will be produced leads to the question of how these wastes should be handled. For management purposes, three types of waste streams can be identified in the region: mixed municipal solid waste; special wastes; and all other solid waste. The counties can plan and develop facilities for MSW and direct its flow to particular waste processing facilities using waste designation authority. The counties are required to plan for the management of other solid waste but are not required to develop facilities or direct the flow of non-MSW. The Council assumes that non-MSW will grow at the rate of MSW during the next 20 years. Studies are underway that will help verify the validity of this assumption. If the entire solid waste stream continues to grow, the management challenges will be more difficult than those associated with MSW and special wastes that have been the focus of public sector attention in recent years.

If the volume of hazardous materials present in the waste stream increases in conjunction with the forecasted growth, it will affect the price generators pay to dispose of their waste and cause more severe environmental impacts. Consequently, Council waste management policies emphasize hazardous waste management and waste reduction strategies.

## **CONCLUSIONS - WASTE GENERATION**

The Council's current projections were based on the assumption that Council policies will slow the growth in the waste stream. In 1994 the Council will revise its waste generation estimates in conjunction with a revision of its solid waste policy plan. The data collected to date on the management of mixed municipal solid waste has confirmed the Council's annual estimates of MSW generation. This gives the Council a degree of confidence that the policy plan continues to offer a responsible vision for solid waste system implementation within the region. The Council's projections of future waste stream growth are much lower than the growth in the regional waste stream between 1970 and 1990. Given the potential for waste stream growth associated with increases in population and employment, hazardous waste management and waste reduction deserve special attention in the years ahead.

## WASTE COMPOSITION

Prior to the mid-1970s, solid waste was generally burned or disposed of in unlined landfills. A sophisticated knowledge of the composition of waste was not necessary to determine how it could best be managed. The seemingly inexhaustible supply of land disposal capacity fostered a "throw-away" mentality. Now, with many waste management options to choose from, it is vitally important to understand the characteristics of solid waste as it relates to the future cost of waste management and the effect of its management on the region's environment.

As the region implements and operates a variety of management technologies to avoid landfilling waste, waste composition data has become increasingly important. The Council, in its solid waste policy plan, calls for counties to cooperatively provide for the development and operation of MSW waste facilities and programs as a single regional system that handles waste in the most appropriate and cost-effective way. Private and public managers and planners must understand the components of the solid waste stream to determine how each can be managed at as high a level in the hierarchy as possible, i.e., most appropriately. In addition, the Council's solid waste policy plan identifies the counties' responsibility to plan for the management of all solid waste. This will require more attention to the management of the non-MSW component of the waste stream.

### DATA - WASTE COMPOSITION

Previous waste composition studies performed in the region have been limited in scope by their length (one or two seasons), the number of locations examined (one or two), and the waste stream studied (MSW only). A similar lack of current data for disposal facilities statewide was recognized by the legislature during the 1990 session. To begin to address this issue, the legislature directed the Minnesota Pollution Control Agency (MPCA) to conduct a statewide analysis of the composition of mixed municipal solid waste. However, with the funding available, the MPCA had to select a limited number of sites for its composition studies. It identified only one location in the Metropolitan Area.

Few resources have been focused to study the types, quantities and current management strategies for non-MSW waste. This information will be important in the future to assist the counties with planning for the management of all solid waste. The Council prepared some preliminary estimates of total solid waste generation for use in its solid waste policy plan, but acknowledged the need for additional research.

Recognizing this need, the Council drew on Abatement Grant and Loan funds to contract with MPCA for a cooperative four-season MSW and a non-MSW composition study at regional waste management facilities during 1992. The MSW study currently under way includes the following facilities: HERC, NSP-Elk River, NSP-Newport, Hennepin County's Brooklyn Park waste transfer station and Pine Bend landfill. Preliminary results of the MSW study reflecting composition information collected during the spring, summer and fall seasons will be reported to the legislature by the MPCA this year. The full study will be completed early in 1993. The information will help the Council and other public and private entities identify opportunities to better manage materials that currently are managed at the bottom end of the waste management hierarchy.

Preliminary data from the non-MSW portion of the study shows that an estimated 1.2 million tons of non-MSW was disposed of or incinerated, 40 percent of the volume of the MSW generated in the region. This research indicates the volume of non-MSW waste was approximately 50 percent greater than estimated in the Council's 1990 Policy Plan. Figure 3 shows the distribution of non-MSW among different types of facilities. Figure 4 indicates the proportionate breakdown of material types in various categories. The proportion of recoverable materials like wood and concrete remaining in the disposal stream is declining but the volume remains substantial.

The Council is planning to use Abatement Grant and Loan funds during 1993 to support consultant studies to further evaluate waste composition. One project will study the proportion of packaging in the MSW stream. Other possible projects include evaluating the opportunities and costs to pre-sort recyclable material at resource recovery facilities, and industrial and MSW landfills, and to further process rejects and residuals from resource recovery facilities.

## **CONCLUSIONS - WASTE COMPOSITION**

The Council will continue to study all solid waste streams to gain a better understanding of the potential recovery and environmental protection options. The information available to date indicates that there continues to be significant potential to divert MSW and non-MSW that is currently being disposed of in landfills or incinerated. Cost-effective reduction, recycling and composting alternatives are preferred over disposal.

Figure 3  
 NON-MSW MANAGEMENT BY FACILITY  
 1991

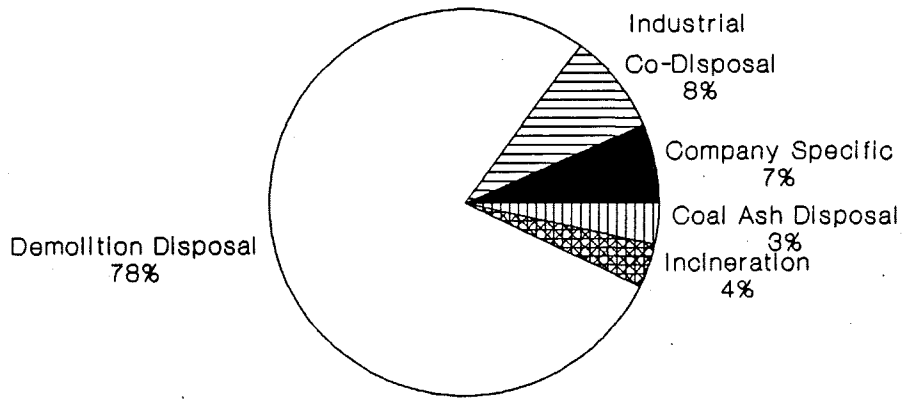
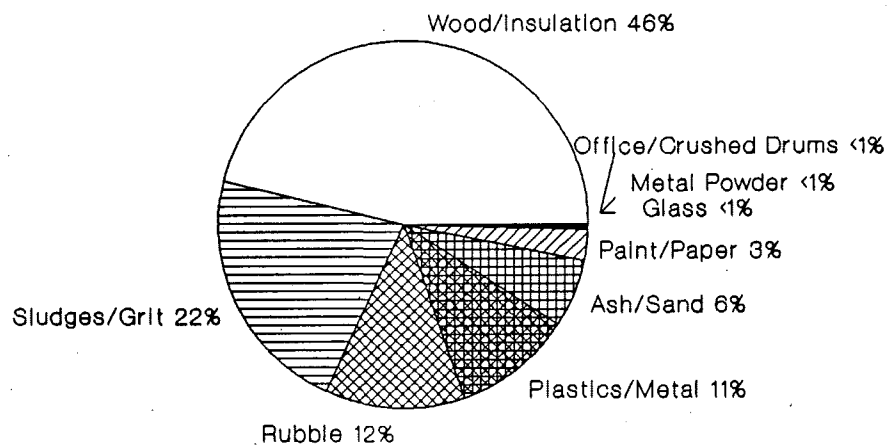


Figure 4  
 NON-MSW CATEGORIES AND VOLUMES  
 OF DISPOSAL AND INCINERATION



## WASTE REDUCTION

Each year, Minnesotans generate millions of tons of trash in the form of wrappings, bottles, boxes, cans, grass clippings, furniture, clothing, phone books, and much more. Over the years, the message to just throw these items away insulated us from thinking about the effect on our economy and environment.

The state of Minnesota and the Council identify source reduction as the most preferred waste management method. Legislation defines waste reduction as:

an activity that prevents generation of waste including reusing a product in its original form, increasing the life span of a product, reducing material used in production or packaging, or changing procurement, consumption, or waste generation habits to result in smaller quantities of waste generated. (Minn. Stat., sec. 115A.03, subd. 36a)

Simply stated, source reduction is waste prevention. It includes many actions that reduce the overall amount or toxicity of waste created. Source reduction can conserve resources, reduce pollution and help cut waste disposal and handling costs.

### DATA - WASTE REDUCTION

Data on the amount of waste reduction occurring in the Metropolitan Area is anecdotal. While the Office of Waste Management (OWM) has begun to explore methods for quantifying waste reduction, specific tonnage figures are not available.

Strategies for promoting waste volume and toxicity reduction in the region include: general public information campaigns; public education campaigns in the region's schools; household hazardous waste collection programs; weight-based waste collection fees; and technical assistance to commercial and industrial generators.

Commitment of financial resources to waste reduction is another measure of effort in the region. County reports to the OWM give an indication of their commitment to reduction strategies even though the expenditure categories address other activities in addition to waste reduction. The metro counties identified expenditures of \$2,483,117 for problem materials management, household hazardous waste management and other waste reduction activities. This represents an increase of more than 100 percent from fiscal year 1990 when the metro counties indicated that \$1.1 million was directed toward waste reduction.

The Solid Waste Management Coordinating Board and the Council are continuing their efforts to coordinate regional waste reduction efforts. Many of the strategies to reduce the volume and toxicity of waste generated--such as regulation of product design, manufacture and packaging, and the provision of financial incentives/disincentives--require action at the federal and/or state level. However, both the Council and the counties can play major supporting roles in ensuring that waste reduction occurs, particularly in the areas of consumer information and education. Both entities are committed to doing their share. For example, the SWMCB has produced and distributed MPCA



approved household hazardous waste reduction fact sheets. For its part, the Council has initiated the waste reduction activities described in the following sections.

#### Regional Public Education Grant Activity

The work program and budget for the Metro Landfill Abatement Account for FY92-93 included \$350,000 for the biennium to be used for regional public education efforts. The funding continues the successful efforts of Council staff and the Metro Recycling Education Task Force (made up of county, state and Council staff), begun in 1989, to plan and implement regional communication strategies that raise the public's awareness of solid waste management issues. The emphasis of the campaign for FY92-93 is to promote waste reduction and reuse, while building on the successful recycling efforts of the region.

With the assistance of the Task Force, the Council selected the advertising firm of Lynch Jarvis Jones to research and develop a recommendation for a media mix and creative strategy for a waste reduction campaign to be executed with Council approval. The firm recommended a 30-second television ad to be run in alternate weeks through June of 1993. Hearing strong support for the recommendation from the metropolitan counties, the Council approved production of the ad, which began running on October 19, 1992.

Since a 30-second ad may call attention to the issue of waste reduction but can do little to "educate" about what is a rather complex issue, the Task Force, Council staff and Office of Waste Management (OWM) staff worked together to ensure that the ad was coordinated with the availability of OWM-developed and -distributed printed education materials on waste reduction for consumers -- the SMART Shopping campaign. The ad will close with a video image of the SMART Shopping logo and instructions about where the viewer can get information about waste reduction.

To support the waste reduction concept introduced by the ad, callers in the Metro Area will be directed to call the Connection®, where they will be given a menu of several voicemail boxes containing specific waste reduction messages so that they can hear the material rather than receive a printed brochure. Callers still wishing to receive printed materials (the SMART Shopping brochures, etc.) or answers to specific questions will be connected directly with the county in which they live for assistance. Callers in Greater Minnesota will be directed to call their county solid waste offices for information. (All counties in Minnesota have received a supply of SMART Shopping brochures and have been provided with training on how to use the materials.)

To further enhance the campaign, the Metropolitan Counties will promote SMART Shopping at the local level through inclusion of waste reduction and SMART Shopping messages in their newsletters and newspaper ads, and distribution of SMART Shopping brochures in local grocery stores, schools, etc. In addition, the Council and OWM have worked with the state's major grocers to have a SMART Shopping logo printed on millions of grocery bags in the months ahead. The integration of the efforts of a variety of entities has, thus, resulted in a comprehensive campaign that will blanket the entire state with a waste reduction message.

#### The Commercial and Industrial Source Reduction and Recycling (CISRR) Project

In late 1991, the Metropolitan Council directed staff to develop a project to help foster waste minimization and source reduction among businesses and institutions in the Twin Cities Area.

Council staff worked closely with the counties to develop a work program for the Council's waste minimization and source reduction efforts. During the development of the work program, it became clear that the counties and at least some solid waste consultants preferred that the Council refrain from trying to provide source reduction technical assistance directly to area businesses. As a result, the Council provides technical support to cities and counties to help make their technical assistance outreach to area businesses more effective.

The mission of the CISRR (pronounced -- *scissor*) project is to provide technical information, publications, training materials and other assistance to facilitate city and county technical assistance outreach on source reduction and recycling to area businesses and institutions.

Major project activities in 1992 include:

- (1) Formation of a CISRR advisory group, whose purpose will be to review drafts of proposed CISRR publications and to help coordinate source reduction activities among the various technical assistance providers and interest groups;
- (2) Search of national data bases and publications for information about other existing source reduction programs with copies of the actual reference materials provided to city and county staff and placed in the Council library;
- (3) Publication of three or more *Source Reduction Fact Sheets* that are intended to provide a quick overview of successful source reduction efforts made by private businesses and public institutions -- giving other businesses and institutions ideas and impetus to begin their own programs;
- (4) Development of new and/or distribution of existing source reduction training materials for city and county solid waste staff; and
- (5) Presentations to chambers of commerce and local chapters of national trade associations on the benefits of business source reduction.

## **ISSUES - WASTE REDUCTION**

Source reduction is a basic solution to the increase in waste generation: less waste means less of a waste problem. Because source reduction actually prevents the generation of waste in the first place, it comes before other management options that deal with waste after it is already generated.

Source reduction, if it is to be successful, requires an intense and consistent effort on the part of generators, state and local governments, and private industry. Large consumers - manufacturers, retailers, restaurants, hotels, schools and governments - can prevent waste in a variety of ways, including using products that create less trash. Manufacturers also can design products that use fewer hazardous components, require less packaging, and/or result in less waste when they are no longer useful.

Another option to prevent waste from entering land disposal facilities is to charge consumers for the

full cost of disposing of their garbage. The Council supports the use and establishment of weight-based fees in the region and throughout the state. Paying by weight gives the generator an economic incentive to reduce disposal. Paying by volume addresses the same incentive but effort can be directed merely toward compacting the waste instead of reducing the actual amount generated.

The Council's solid waste policy plan supports these strategies with specific policies. It also urges the addition of an environmental protection fee at landfills and a tax on hazardous materials, both to pay for environmental protection costs and to provide more economic incentive for waste reduction.

## **CONCLUSIONS - WASTE REDUCTION**

The Council will continue to monitor growth in the waste stream managed in the region. Both the counties and the Council will continue to promote waste reduction through the public education and technical assistance programs previously described, and to develop improved methods for documenting results. Simply stated, significant waste reduction must occur in order for the waste management system currently planned to be sufficient for the region's needs.

The Council will work to establish the environmental protection fee and toxic materials tax called for in its policy plan as additional incentives for waste reduction. If these strategies are not sufficient to keep waste generation at or below projected levels, additional legislation may be sought.



# RECYCLING

Integrated waste management refers to the complementary use of a broad spectrum of practices to safely and effectively manage municipal solid waste. After waste reduction and reuse, the most preferred waste management strategy is recycling. Recycling is the process by which materials are collected and used as raw materials for new products. There are four steps in recycling: collecting the recyclable components of municipal solid waste, separating materials by type (before or after collection), processing them into reuseable forms, and purchasing and using the goods made with reprocessed materials. Recycling prevents potentially useful materials from being landfilled or combusted, thus preserving our capacity for energy recovery and disposal.

For purposes of this report, recycling data principally identifies materials that would be classified as MSW if they were not recycled. For example, auto hulks are specifically excluded from the legislative definition of MSW (Minn. Stat. 115A.03, subd. 21). Therefore, while auto hulks are recycled, they are not counted in this report, which is focused on managing MSW. Certain other materials (yard wastes, used oil, tires, lead acid batteries and major appliances) that are now managed separately are still counted in the recycling tonnages reported by counties.

In reporting the counties' recycling progress, the Council assumes the legislative definition of "total solid waste generation " described in Minn. Stat. 115A.551, subd. 1, which includes the total weight of:

1. Materials separated for recycling;
2. Materials separated for yard waste composting;
3. Mixed municipal solid waste plus yard waste, used oil, tires, lead acid batteries and major appliances; and
4. Residential waste materials that would be mixed municipal solid waste but for the fact that they are not collected as such.

## Recycling Objectives

Minnesota Statutes 115A.551, subd. 2, establishes a minimum recycling goal for each county in the Metro Area of 35 percent, by weight, of total solid waste generation (as defined above) by Dec. 31, 1993. The Metropolitan Council no longer sets individualized recycling objectives for each of the counties, but rather has established overall recycling objectives in its 1991 *Solid Waste Management Development Guide/Policy Plan*. The policy plan presents waste generation forecasts and recycling objectives on a calendar-year basis. The following are the Metropolitan Council's recycling objectives for the region for the period 1990 - 2010.

### **Recycling Objectives for the Metropolitan Area**

<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>2000</u>	<u>2010</u>
20%	25%	30%	35%	40%	45%	50%	50%

## DATA - RECYCLING

The 1991 recycling objective of 25 percent reflects the need to continue increasing the amount of recycled materials collected and marketed in the region. Table 2 compares the total amount of recycling reported by each county with the county's estimate of MSW managed. If the combined recycling volume were compared with the Council's slightly higher estimate of waste generation, the overall recycling rate would still be 41 percent.

Table 2 1991 RECYCLING/MATERIALS RECOVERED (tons)				
County	MSW Reported as Recycled by County <sup>1</sup>	MSW Reported as Managed by County <sup>2</sup>	Percent Recycled	Council Recycling Goal
Anoka	90,444	222,100	41%	25%
Carver	18,076	43,000	42%	25%
Dakota	112,412	280,000	40%	25%
Hennepin	617,438	1,337,817	46%	25%
Ramsey	198,737	495,352	40%	25%
Scott	30,402	67,597	45%	25%
Washington	44,344	153,139	29%	25%
<b>Metropolitan Area</b>	<b>1,111,853</b>	<b>2,599,005</b>	<b>43%</b>	<b>25%</b>

<sup>1</sup> Includes all materials reported by metropolitan counties as having been recycled (recycling figures may include estimates of yard waste reduction through backyard composting). Above figures include OWM's recycling estimates for yard waste, major appliances, oil, tires and motor-vehicle batteries.

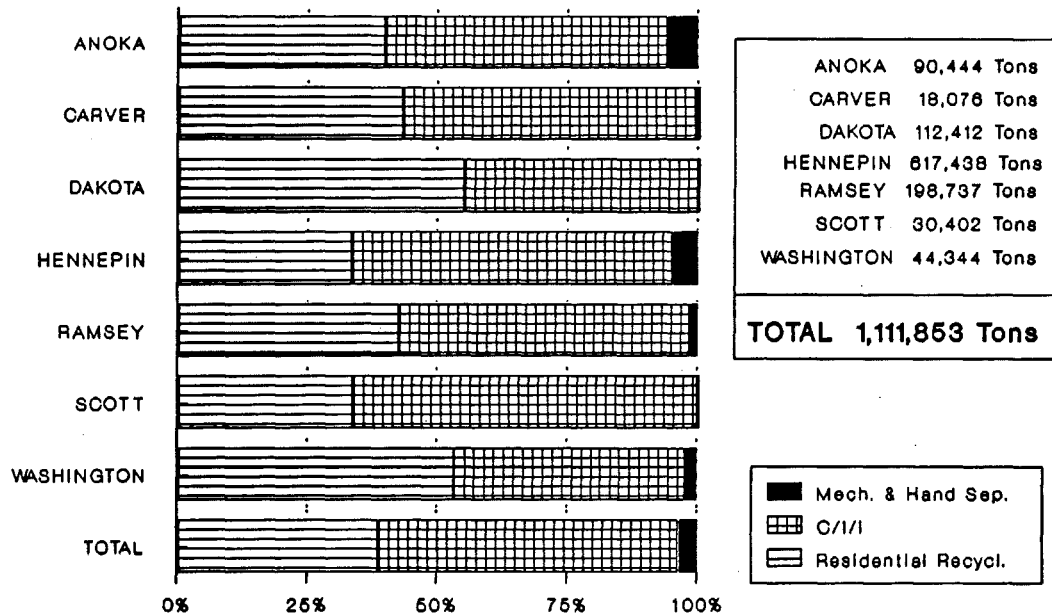
<sup>2</sup> Waste managed includes waste received at facilities (adjusted for facility recovery of recyclables listed in the "recycled" column), excess waste disposed from transfer facilities, waste reported as recycled and the OWM's estimates of unrecycled waste oil and tire management.

Source: County Recycling & Certification Progress Reports, March and August 1992.

The individual county generation figures are slightly different than the Council's reported generation forecast (larger in four counties, the same in one and less in the two largest counties). In general, the counties as a group have reported managing less total MSW than the Council forecast for the region and as a result the overall recycling rate is higher in comparison with reported management than with estimated generation.

Figure 5 illustrates the relative contribution of each type of recycling reported by counties. In previous reports this figure listed residential recycling, yard waste composting, commercial/industrial/institutional (C/I/I) recycling, and recycling reported by resource recovery facilities. The recycling categories that counties report to the Council and OWM have changed to include only residential recycling, documented and undocumented C/I/I recycling and mechanical and hand separation recycling. In 1991, all seven counties show undocumented commercial/industrial recycling as the leading recovery category. Residential recycling is the next highest in volume.

Figure 5  
RELATIVE CONTRIBUTION OF EACH  
TYPE OF RECYCLING - 1991



Source: County Recycling Reports, Updated 9/92.

In 1991, C/I/I recycling accounted for well over half of the total recycling reported by the seven counties. Table 3 compares the C/I/I recycling data reported by the counties.

County	Documented C/I/I	Undocumented C/I/I	Total C/I/I	Total Recycling	Percent of C/I/I to Total Recycled
Anoka	845	48,119	48,964	90,444	54%
Carver	203	10,046	10,249	18,076	57%
Dakota	1,175	49,275	50,450	112,412	45%
Hennepin	5,431	378,227	383,658	617,438	62%
Ramsey	2,308	105,239	107,547	198,737	54%
Scott	115	20,019	20,134	30,402	66%
Washington	412	19,356	19,768	44,344	45%
<b>Metropolitan Area</b>	<b>10,489</b>	<b>630,281</b>	<b>640,770</b>	<b>1,111,853</b>	<b>58%</b>

Source: County Recycling & Certification Progress Reports, March and August 1992.

Documented C/I/I materials refer to the recycling tonnages reported to the counties from city offices, school districts, hospitals and other institutional uses. Undocumented commercial and industrial recycling tonnages are estimated by counties based on limited survey data. These figures are the least reliable of the recycling data reported by the counties. They represent an area of concern with respect to the accuracy of the entire recycling report prepared by each of the counties, since the combined commercial and industrial tonnages represent from 45 to 66 percent of the total recycling reported by the counties.

In many cities, curbside collection is provided primarily to single-family residences and to residential buildings containing up to four dwelling units. In some cities curbside recycling collection includes small businesses and other institutions that usually are located in residential neighborhoods. Most curbside recycling programs collect aluminum and bimetal beverage and food containers, glass containers and newsprint. Many also collect corrugated cardboard and plastic bottles. Hennepin County communities are required to collect a variety of plastic containers.

Multifamily buildings of five or more units have not traditionally been provided with residential curbside collection in most communities. Significant efforts to include multifamily buildings as part of the recycling infrastructure have, however, begun in the region. For example, most of the municipalities in Ramsey County have multiunit residential recycling programs.

Figure 6  
RESIDENTIAL RECYCLING

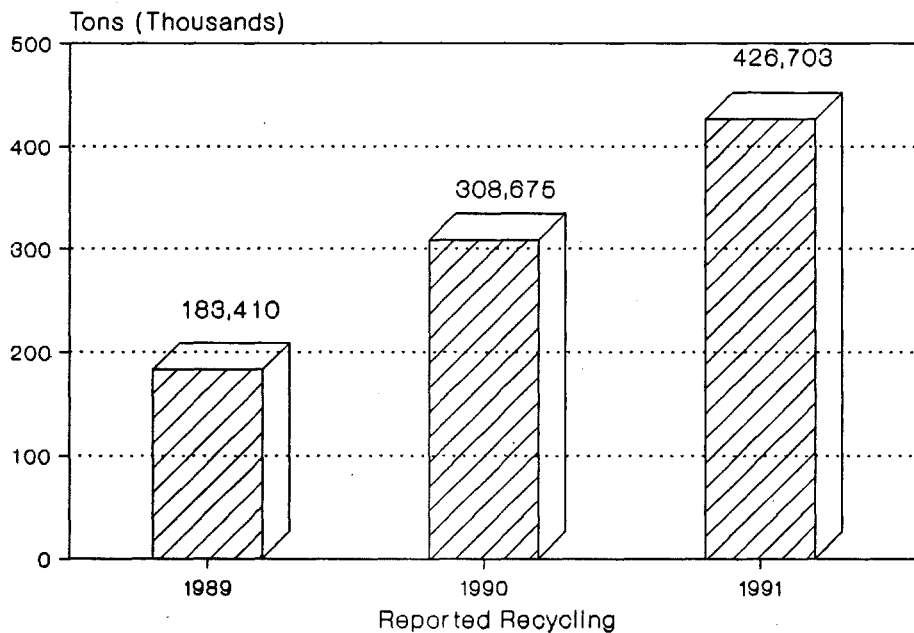


Figure 6 compares total residential recycling as reported by the counties for 1989, 1990 and 1991. Note that the 1991 total represents a 38 percent increase over the tons reported recycled for 1990 and a 133 percent increase over the tonnage reported in 1989. This reported increase is remarkable.



## ISSUES - RECYCLING

Regional recycling data reported by metropolitan counties suggests that they are ahead of their recycling objectives, with all of the counties reporting recycling rates higher than the 25 percent objective established in the Council's revised policy plan. Six counties report that they met or exceeded the 35 percent recycling rate mandated for Metro Area counties at the end of 1993. Hennepin County reported the highest recycling rate of 46 percent. Washington County reported the lowest rate of 29 percent. Most of the difference between these recycling rates can be attributed to the high proportion of commercial/industrial recycling estimated by Hennepin County. Recycling half the waste stream as it grows with population and employment in the future will still, however, require substantial increases in recovery volumes.

### Residential Recycling

With counties and cities facing increased pressures to recycle at greater levels than previously achieved, recycling programs have begun to expand their collection programs to include nontraditional materials such as magazines, plastics and several additional paper grades, including computer and mixed paper. During 1990 the Council conducted a study of the potential supply of recyclables in the waste stream and the available market capacity. Franklin Associates, Ltd., performed the work. The results indicated that even if 100 percent of the eight recyclables identified in the study were recycled, reaching the 50 percent recycling objective by 2000 would be a challenge. The eight materials studied included: old corrugated cardboard, mixed papers, glass containers, rigid plastic containers, metal (steel) food containers, aluminum, yard waste and old newspapers. Clearly, the variety of materials being recycled will need to increase if recycling objectives for the future are to be met.

Another study by the Council found in 1991 that, while most households claim to recycle, the actual number of households recycling in any given week can vary considerably. In order to increase residential recycling rates, households will not only have to recycle more materials, more of them must participate, and on a more consistent basis.

The recycling data provides interesting insights about the success of local recycling programs. Those with above- and below-average recovery per capita during the first half of the year were compared for three factors - program longevity, availability of free recycling bins and frequency of collection. Longevity had only a modestly favorable impact in that 92 percent of the more successful programs were in existence more than a year versus 88 percent of the less successful programs. The same was true of free bins - 83 percent versus 80 percent. There was no difference between the above- and below-average programs in terms of collection frequency - 51 percent of both categories offered weekly service. Consequently, more subtle factors, like effective publicity, capable staff, and the two refinements described below are likely to be critically important to achieve significant gains from the current high recovery levels.

One way to increase participation rates is to collect recyclables on the same day as regular trash collection. Same-day collection allows recycling to benefit from the pre-established memory association of needing to "set out" the trash. It helps to reduce the argument that recycling requires

"extra" effort. Same-day collection also has the added community benefit of reducing the number of days when materials are set out for collecting, and reducing the number of days of truck noise associated with trash and recycling collections.

There is concern that traditional source-separation programs that require households to separate recyclables by type (old corrugated cardboard, old newspapers, cans, glass, yard wastes, etc.) will experience a decline in participation rates if households are required to separate and store even more materials (plastics, mixed paper, magazines, etc.) in order to meet recycling objectives.

A way to deal with the problem--expanding the number of recyclable materials while improving participation rates--may be an alternative source separation and collection program known as commingling. Commingling involves the mixing (commingling) of recyclables into only one or two groups rather than separating into five, six or more discrete component groups. By reducing the number of separations, people can save both time and storage space. Recycling collection vehicles can be made simpler and the cost of collection can be reduced because of the reduction in the number of curbside sorting operations (separation at curbside into the various bins in the collection vehicle).

Such a commingled recycling system would likely reduce collection costs per stop slightly, create some increased revenues from the additional amount of materials collected, and require added costs for processing to separate the commingled recyclables into their components for shipment to market. Contamination problems will offset some of the potential increase in collection. The principal advantage accrues mostly to the household by making recycling more convenient. Greater convenience should bring greater participation and higher recycling tonnages.

### **Commercial/Industrial/Institutional Recycling**

Many large shopping centers, single-tenant office buildings and large industries are presently recycling, but smaller shopping centers, multitenant and smaller office buildings, and small industries do not appear to be involved in comprehensive recycling programs. Many commercial recyclers have traditionally focused on one or two of the more valuable components of the commercial waste stream (for example, white office paper and corrugated cardboard). Markets and avoided disposal costs are the primary factors affecting these recycling commitments. Today, commercial recyclers have an excess supply of recycled materials which has contributed to weak market prices. While markets do appear to exist for all commercial recyclables, the profit margins for commercial recyclers have largely disappeared. The resultant recycling cost for business generators is likely to be somewhat less than the costs charged for waste collection, but the difference may not be sufficient to cause smaller commercial and industrial establishments to undertake comprehensive recycling.

Much of the Commercial/Industrial data reported by the counties is based on estimates reflecting increases predicted from surveys of business and industries in the counties. Recyclers and haulers providing recycling services to the commercial and industrial sectors have opposed providing tonnage data for their "clients" and do not report tonnages to either cities or counties. This practice is in sharp contrast to the better documented tonnage figures for residential recycling programs, which are supported by weight-receipts that the recyclers/haulers provide to cities, or the volume estimates of yard waste provided by haulers and yard waste management facility operators.

While it would be reassuring to have documentation of commercial/industrial recycling, report requirements are not necessary if abatement results continue to be achieved. The commercial/industrial estimates appear to be corroborated by the achievement of the Council's landfill limits and the consistency of reported management with Council estimates of overall generation.

## CONCLUSIONS - RECYCLING

Recycling in the Twin Cities Area appears to have met and exceeded the Council's recycling objectives for 1991. It appears likely that all of the metro counties will meet or exceed the legislative goal of 35 percent recycling by Dec. 31, 1993.

County efforts to ensure that recycling options are available to most residents in cities and townships appear to have been successful. With 92 percent of the cities and townships in the Metro Area reporting recyclables collected at curbside, it appears that the regional recycling infrastructure as envisioned in the Council's *Solid Waste Management Development Guide/Policy Plan* has been successfully developed.

While recycling appears to be expanding rapidly in the region, there are areas of concern. Recycling objectives for later in the decade will be difficult to meet unless recycling programs expand to add more materials and recycling becomes a habit for all people at home, at school and at work. In order for people to truly develop a recycling habit, recycling must be available and relatively convenient to everyone regardless of where they are.

People will be asked to recycle as much of the waste stream as possible. It is expected that recycling programs may involve seven or more different recyclable materials in the future. Separation of each of these materials into component types requiring separate storage and collection will be an inconvenience to many, and may adversely affect participation rates and recycling tonnages in the future. If the cost to collect these separated materials increases relative to the price received from marketing the materials, it may not be practical to require generators to separate materials into numerous categories or require haulers to collect several separated components.

Fundamental changes will be required to handle the increase projected over the next decade in the types and amounts of materials collected. Same-day collection of waste and recyclables will promote the recovery of recyclables. This may prove to be a hardship for some haulers initially as schedules are juggled to fit community-pickup days. In addition, commingled recycling and commingled recycling/trash collection appear to offer the potential for improved convenience and the opportunity to recycle additional materials cost effectively. The Council is open to using its Abatement Grants Program to help underwrite the cost to evaluate and demonstrate during FY 1993 whether these ideas are workable before taking further steps urging such a radical change in the system for both recyclers and the public.

Efforts to collect additional quantities of recyclable materials must continue to be directed at multifamily buildings. In urban areas such as Minneapolis, where over 32 percent of the population lives in structures with five or more units, this represents a partially untapped source from which additional recyclables can be collected. Multimaterial recycling programs need to be expanded to include all multifamily residences. It may also be appropriate to expand curbside programs to include

small neighborhood businesses or even entire business districts in smaller, more rural communities.

Market profit margins have eroded for materials recovered for recycling. The Council has identified in its policy plan the need to concentrate efforts regionally on improving markets for recyclable materials. The Council has adopted a policy to target Abatement Account monies to enhance markets for recyclable materials.

Existing reporting methods rely on estimated recycling efforts in the commercial/industrial sectors. The data presented in county recycling reports suggest that commercial/industrial recycling is widespread and being successfully implemented in all counties. The consistency of county reported MSW with the Council's forecasts coupled with the achievement of the Council's landfill limits corroborates the commercial/industrial recycling data. It may become important to obtain documentation on this recycling activity in the future if the estimated recovery is not consistent with other indicators of waste management.

## CENTRALIZED PROCESSING

The solid waste produced by the region includes mixed municipal solid waste, special wastes, construction and demolition waste, and nonhazardous industrial waste. Hazardous wastes are managed under separate state and federal requirements. The counties are required by state law to plan for the management of all solid waste generated. Counties are only required to develop processing capacity for mixed municipal solid waste and are not currently required to manage other solid waste, some of which consumes sanitary landfill capacity. Private firms continue to evaluate how to recycle or process various components of the solid waste stream and are considering development of facilities to manage specific solid waste components.

Centralized processing of MSW is accomplished through resource recovery facilities employing either mass burn, refuse-derived fuel (RDF) or composting technologies. Transfer stations help to regulate the flow of waste to processing facilities and also serve to remove recyclable materials from the waste stream prior to processing. Where designation ordinances are in effect, mixed municipal waste haulers are required to deliver waste to processing facilities or transfer stations. Three counties have not implemented designation due to a lack of resource recovery facility capacity to process the waste. The counties that have implemented designation--Hennepin, Ramsey, Anoka, and Washington--had fully operational facilities during 1991.

### DATA - CENTRALIZED PROCESSING

In 1985 only one mixed municipal solid waste processing facility was operating in the region. In 1991 the region had five operating resource recovery facilities capable of processing a total of 3,850 tons of waste per day. These facilities are designed to manage different portions of the mixed municipal waste stream. They were not primarily designed to process non-MSW portions of the waste stream.

Based on the 1985 and 1991 policy plan directives, the region has developed or planned for future development a number of different types of centralized processing facilities. Existing facilities and their average daily throughput capacity in tons per day (TPD) include: the Hennepin County mass-burn facility (1,000 TPD); the Ramsey and Washington County (NSP) refuse-derived fuel (RDF) facility (1,000 TPD); the NSP - Elk River RDF facility (1,300 TPD); the Reuter densified-RDF facility (475 TPD); and the Richards Asphalt modular mass-burn facility (75 TPD). Remaining scheduled facilities include the Dakota County mass-burn facility (640 TPD); a Carver and Scott County MSW composting facility (200 TPD); additional MSW composting capacity (350 TPD); and secondary processing for RDF plant rejects and residuals. Several proposals to provide this scheduled capacity have been delayed or terminated and the RDF reject and residual management capacity need is being addressed through facility enhancements and interfacility arrangements. The additional MSW compost capacity scheduled could be addressed in a variety of ways. Reuter Inc.'s proposed MSW composting facility, Recomp's proposed food waste composting facility, capacity sharing with completed but underutilized facilities and other private proposals are all appropriate possibilities.

Table 4 shows the current and planned centralized processing facilities for the Metropolitan Area through 1995.

Table 4 <b>CENTRALIZED PROCESSING CAPACITY FOR THE METROPOLITAN REGION</b> (Tons Per Day Expected Average Daily Throughput)		
CURRENTLY OPERATING FACILITIES	TECHNOLOGY	CAPACITY
Hennepin Energy Resource Corp.	mass burn	1,000 TPD
Ramsey/Washington Resource Recovery Project	RDF	1,000 TPD
Anoka/Hennepin Elk River Resource Recovery Facility	RDF	1,300 TPD
Reuter, Inc.	RDF	475 TPD
Richard's Asphalt	mass burn	75 TPD
ADDITIONAL FACILITIES SCHEDULED		
Dakota County Resource Recovery Facility (operational 1995)	mass burn	640 TPD
Scott/Carver MSW Composting Facility (operational 1994)	MSW compost	200 TPD
Unspecified location	MSW compost	350 TPD
<b>TOTAL PROCESSING CAPACITY (by 1998)</b>		<b>5,040 TPD</b>

By 1995, if all of these facilities are operating as planned, the region will have a total processing capacity of approximately 5,040 TPD. This processing capacity could manage about 53 percent of the region's mixed MSW in 1995 and 50 percent of the volume projected in 2000. Downsizing of the proposed Dakota County incinerator and the effective termination of the Scott/Carver and Recomp projects will require adjustments in expected development. To the extent capacity can be committed from projects currently seeking additional waste supplies, like the compost projects in Wright County and the East Central plant in Mora, new replacement projects may not be necessary.

Table 5 shows the amount of MSW received by regional resource recovery facilities from 1988 through 1991. In 1988 only 15 percent of the estimated MSW stream was managed through centralized processing, compared to 1991, when 46 percent of the estimated MSW stream was sent to centralized processing facilities. In 1991, regional waste processing facilities, including Hennepin County's transfer stations, received 1,248,014 tons of waste, or 4,000 tons of waste per day.

Table 5  
**WASTE RECEIVED AT CENTRALIZED PROCESSING FACILITIES IN THE  
 METROPOLITAN AREA  
 1988 - 1991 (in tons)**

Facility	Type	1988	1989	1990	1991
HERC	Mass Burn	0	52,862	323,136	360,565
Richards	Mass Burn	19,040	23,118	24,842	23,636
Elk River (NSP)	RDF	0	371,630	351,661	343,771
EPR	RDF	25,818	64,171	124,306	86,410
Newport (NSP)	RDF	360,648	371,630	411,057	391,962
		405,506	883,411	1,235,002	1,206,344

Waste received and disposed of from Hennepin County's waste transfer facilities are not included in the above figures for HERC.

Waste received at HERC from EPR and NSP are not counted in HERC's total in this table. In addition, waste received at NSP-Elk River (Anoka's portion) from EPR and AMG are not included in the total amounts for waste received.

SOURCE: Metropolitan Area Waste Certification Reports - 1991

The design capacity may exceed the amount of waste that the facilities are expected to process on an annual basis. Seasonal variations in the flow of waste, down time for routine maintenance, and unexpected problems all limit the amount of waste that a facility may actually process.

The NSP-Elk River and Eden Prairie Recycling (EPR) facilities had processing capacity that was not fully used in 1991. The EPR facility limited the waste it received to approximately 280 tons per day. The EPR facility is permitted to process an average of 475 tons per day of waste. Anoka County did not have sufficient waste to meet its contractual obligation to NSP Elk River. Anoka delivered an annual average of 453 tons of waste per day to Elk River but was obligated to NSP to deliver 500 tons per day. In total, 14,430 tons of capacity at Elk River, intended for Anoka County use, was not used. The total processing capacity that was not used at the two facilities was approximately 76,000 tons in 1991. A number of inter-facility agreements were established during the year to allow secondary processing of rejects and residuals from one facility at another.

Hennepin County diverted approximately 56,000 tons of waste from its transfer facilities to land disposal facilities in 1990. In 1991, Hennepin County disposed of nearly 27,000 tons of waste from transfer facilities, achieving a 52 percent reduction from the previous year. The Ramsey/Washington NSP-Newport facility sent 64,971 tons of excess waste to landfill.

The region landfilled 11,466 tons of rejects, i.e., waste that could not be processed at the facility that received it. Likewise, 167,583 tons of processing residuals were produced in the region that were landfilled by processing facilities. In 1991 28 percent of the regional waste stream was converted to energy and 16 percent of the regional MSW was landfilled as rejects, residuals, or ash.

Table 6 shows the amount received, landfilled (rejects, residuals, excess, recyclables and ash), and recycled by regional centralized processing facilities. Regional facilities landfill approximately 36 percent of the total weight received while processing 64 percent.

Table 6 MANAGEMENT OF MSW RECEIVED AT PROCESSING FACILITIES, 1991						
Facility	Tons Received	Tons Rejects	Tons Residuals <sup>1</sup>	Tons Excess <sup>2</sup>	Tons Ash	Energy/ Recycling <sup>3</sup>
HERC <sup>4</sup>	360,565	250	0	0	99,963	260,352
Richards	23,636	0	0	0	8,077	15,559
Elk River	343,771	8,614	62,391	0	51,545	221,221
EPR	86,410	2,423	47,075	0	3,775	33,137
Newport	391,962	179	58,117	64,971	32,378	236,317
<b>TOTAL</b>	<b>1,206,344</b>	<b>11,466</b>	<b>167,583</b>	<b>64,971</b>	<b>195,738</b>	<b>766,586</b>
<b>Percent</b>		<b>1%</b>	<b>14%</b>	<b>5%</b>	<b>16%</b>	<b>64%</b>
<p>1. Residuals include RDF and recyclables that were landfilled.</p> <p>2. Waste that does not proceed directly through processing lines; this waste may include non-processible waste.</p> <p>3. This figure represents the amount of waste converted into energy, RDF and recycled by metro area processing facilities. This figure is calculated by subtracting reject, residual and ash from the total waste received.</p> <p>4. Does not include approximately 27,000 tons of excess waste diverted from Hennepin County transfer facilities in 1991.</p> <p><b>SOURCE: Metropolitan Area Solid Waste Certification Reports - 1991</b></p>						



## **ISSUES - CENTRALIZED PROCESSING**

The Council's revised solid waste management plan calls for residuals and rejects to be further reduced by methods other than land disposal. For example, the wet fraction of the waste stream could be reduced by removing food waste while wastes that are unprocessable at an RDF facility are often either compostable or processible at a mass-burn facility. To have an efficient, fully functional regional solid waste management system calls for more processing facilities or expanded processing capability at existing facilities. Ramsey and Washington Counties are working with the NSP Newport facility to install a residue processing system that is projected to increase recycling recovery from the 3.3 percent rate at the end of 1990 to approximately ten percent of intake. Whether new facilities are built or additional processing capacity is built into existing facilities, it is clear that the region will need to improve the effectiveness of the waste processing portion of the regional waste management system to meet regional objectives.

The Council's revised solid waste policy plan indicates a need to develop additional processing capacity by 1993. Additional processing capacity is required to manage waste currently entering land disposal facilities and the estimated future growth in the MSW stream. As Table 5 outlines, the Council has scheduled three facilities to provide 1,190 tons per day of additional processing capacity. This capacity can be provided in a number of ways other than through new plants located within the region.

The Council's 1991 solid waste plan requires that a diversified system be developed that matches appropriate waste management technology with components of the waste stream. This requires building and operating different processing facilities using different technologies while also adhering to the state's mandated waste management hierarchy. It does not appear necessary or cost-effective for each county to develop a complete range of processing options (recycling, composting, energy recovery).

Different components of the MSW stream are produced in different volumes throughout the year. Also, there is considerable variation in the amount of waste generated in the region. The regional waste processing system cannot be run to use the optimal processing capacity at each facility at all times. The design capacity cannot be used to predict the actual volume of waste that facilities will process. The actual processing capacity of existing facilities appears to be 3,850 tons per day.

## **CONCLUSIONS - CENTRALIZED PROCESSING**

The region has made great strides in the development of safe and effective waste processing facilities. The facilities that have been developed to date are fully operational. The level of rejects, residuals and ash produced by the facilities is comparable to the predicted rates planned by the counties. The regional policy plan calls for managing the residuals, rejects, and ash by methods other than landfilling. In order to accomplish this objective, the counties must continue developing and implementing programs and facilities to manage the residuals, rejects, and ash. The need for additional processing facilities in the region is very clear. On the surface, the Council's policy plan projects that 5,040 tons per day of processing capacity will be needed in the region. This existing and projected capacity appears to show the region will process 58 percent of estimated MSW generation during 1991. Looking closer, part of the processing capacity in the region will be devoted to

managing processed rejects and residuals. Also, the waste stream is projected to continue growing. Thus, only 50 percent of MSW generation is actually scheduled to be processed when all the planned capacity is operational.

## **IMPLEMENTATION OF DESIGNATION**

Minnesota statutes stipulate that the Metropolitan Council must supervise the implementation of waste designation authority within the region (Minn. Stat. 115A.89). Designation authority allows a district or county to direct all or a portion of the solid waste generated within its service area to a processing or disposal facility it identifies. Private entities desiring to operate a processing facility using waste materials subject to a designation ordinance may petition for exclusion of the materials from the designation requirements. The Council must 1) require regular reports on the implementation of each designation, 2) evaluate whether each designation is accomplishing its purposes and state objectives and 3) report periodically to the legislature on its conclusions and recommendations.

### **DATA - DESIGNATION AND EXCLUSIONS**

Each of the counties with approved designation ordinances in the region and each entity that has sought an exclusion from designation was surveyed. The counties with designation authority are Anoka, Hennepin, Ramsey and Washington. Table 11 identifies the entities that have requested exclusions from the counties and indicates the status of their requests.

The counties reported that designation has worked to provide adequate waste flows to support the economic viability of designated facilities. No difficulties in obtaining sufficient waste supplies or adequate fees were identified. Enforcement problems appear to be minimal and the counties believe a high percentage of waste subject to designation is being delivered as required. Education efforts, visible monitoring, violation notices, license revocations, license suspensions, criminal citations, convictions, fines and recovered fees were identified as tools to achieve effective compliance. No changes to the existing designation legislation were recommended by counties.

Counties that are currently attempting to initiate designated facilities are experiencing difficulties resulting from recent court decisions declaring that restrictions of waste flows beyond state boundaries conflict with the interstate commerce clause of the U. S. Constitution. Scott and Carver Counties abandoned efforts to site an MSW composting facility on advice from their bond counsel. They were advised that designation might not be effective in securing an adequate waste supply at a tip fee substantially higher than the cost of transporting the waste to landfills with low fees in surrounding states.

Exclusion requesters reported that the county review process was fair but very slow. The lengthy time to review requests was perceived as delaying projects the proposers felt would manage wastes higher on the waste management hierarchy than through management at designated facilities. Delay was associated with higher costs to complete projects. Some sympathy was expressed for the risk to counties associated with approving exclusions that could reduce future deliveries to county facilities that may also have their designation authority eroded through judicial intervention. Competition for waste was viewed as a stumbling block for developing facilities higher on the waste management hierarchy.

Several suggestions were offered by exclusion entities to improve the process:

- A time limit maximum of six months for review of exclusion requests would limit the time, investment capital and company resources that would have to be committed to determine whether a proposal is viable.
- A cap on the size of exclusion and designation projects would avoid dependence on a few large operations and promote the use of smaller, more flexible alternatives.
- A judicial process for approving exclusions would eliminate political considerations by relying upon a more objective analysis of state and county policy considerations.
- Additional clarification of the types of processing intended to qualify for priority on the waste management hierarchy would encourage businesses to undertake more high hierarchy initiatives.
- A positive structure to promote exclusion goals would reward projects that manage waste higher on the hierarchy than designated facilities.
- Exclusion goals, like existing recycling goals, were proposed to foster competition "to process waste." Relying on flow control measures were perceived as discouraging processing initiatives that should be accomplished privately.

**Table 7  
DESIGNATION EXCLUSION REQUESTS**

COUNTY	APPLICANT	WASTE TYPE	TPD	STATUS
ANOKA	Burger King	Food Waste	1	DENIED - Not qualified as a resource recovery facility.
	Recomp, Inc.	Food Waste	1	WITHDRAWN
	Recomp, Inc.	Food Waste	1	TABLED - per Recom 3/92 Swap Agreement: Food Waste to Recom for equal amount of mixed MSW to Elk River.
HENNEPIN	BFI Pine Bend Recyclery	Select Commercial load	137	GRANTED - 10/90
	Recomp, Inc.	Food Waste for St. Cloud composting	4.3	GRANTED - 9/91
	Recomp, Inc.	Mixed Food for Rosemount Composting	120	GRANTED - 6/92
	Knutson	Commercial	7	GRANTED - 5/92
	Metro Compost Ryan Construction	MSW & Food Waste	120	PENDING - waiting for additional information from applicant.
	Gallagher's	N/A	N/A	Application forwarded. No petition to date.
RAMSEY	Waste-to-Energy	MSW	430	WITHDRAWN
	3M Company	Commercial/Industrial	120	WITHDRAWN - Mass Burn/Hearing/ Decision stayed.
	Junker Sanitation	MSW	100	WITHDRAWN - Mass Burn/Hearing/ Decision stayed.
	Recomp, Inc.	MSW (Food/Paper Waste) - Rosemount	100	PENDING - Hearing in progress.
	Dakota Resource Recovery	Commercial/Industrial	50	WITHDRAWN - No exclusion needed. Waste already source separated & exempt.
	Recomp, Inc.	Food/Paper Waste	3.8	GRANTED
WASHINGTON	Waste-To-Energy	MSW	430	WITHDRAWN
	3M Company	Commercial/Industrial	120	WITHDRAWN
	Junker Sanitation	MSW	100	WITHDRAWN
	Pine Lane	MSW	19.7	DENIED - Not processed at other facility.
	Recomp, Inc.	MSW (Food/Paper Waste) - Rosemount	105	PENDING - Hearing in Progress.
	Dakota Resource Recovery	Commercial/Industrial	71.2	WITHDRAWN
	Recomp, Inc.	Food/Paper Waste	5	GRANTED

## CONCLUSIONS - DESIGNATION IMPLEMENTATION

Designation in the Metropolitan Area is working effectively for existing facilities. The facilities are obtaining sufficient waste flows and tipping fee income to support their operation and debt service. Recent court cases declaring state flow controls unconstitutional with respect to interstate commerce have discouraged counties from initiating new facilities that would rely on waste designation for financing.

County uncertainty about the ability to successfully rely on designation to assure adequate waste and fee income at designated facilities has resulted in long time-frames for evaluating exclusion requests. Delays have also been requested by the petitioners. The delays have slowed the implementation of private initiatives. Delays have diminished during the past year and no time restriction for review of exclusion requests is recommended at this time.

Confusion over what qualifies as exempt processing through management higher on the hierarchy than at designated facilities is an ongoing issue, particularly with regard to food waste composting. Legislation indicating how pure the food waste stream must be would almost certainly promote the use of this preferred management strategy within the region. A pure food stream standard would be too restrictive as it is nearly impossible to separate all the packaging and sanitation items associated with food waste. Also, a pure food stream is likely to be used as animal feed instead of compost and would require the addition of a bulking agent like paper to compost effectively. On the other hand, if the food content were allowed to be too low, composting could merely be a guise to manage MSW outside the scope of designation. Defining food waste composting as an intake stream consisting of more than 50 percent food, with an assurance that separated contaminants are subject to designation, should provide a balance between promoting food waste composting and protecting counties from unfair competition.

The exclusion goal concept is interesting but not likely to generate the same level of widespread understanding and support as recycling goals have achieved. Continuing the public process for evaluating exclusion requests offers sufficient opportunity to monitor whether counties are approving sufficient exclusion proposals to achieve the objective of minimizing the future disposal of unprocessed waste.

# LAND DISPOSAL

Landfills continue to remain an essential method for managing the region's MSW despite their place at the bottom of the waste management hierarchy. The landfills continue to receive significant amounts of waste because they are the option of last resort. Increases in recycling coupled with recessionary business conditions dramatically reduced the disposal volumes during 1991. Waste processing had little impact on the decrease because no new processing facility capacity was commissioned during the year.

## DATA - LANDFILLS

The Council periodically reviews landfill capacity for the region. Aerial photo surveys of regional land disposal facilities are analyzed to account for remaining landfill capacity. The most recent aerial photographs used to determine the remaining capacity of landfills were taken in 1990. The surveys showed an estimated 6,427 acre-feet of remaining capacity in the region's four remaining landfills in 1990. New aerial surveys of regional and non-metropolitan land disposal facilities are being conducted this year and will be available in 1993. The rate of consumption, as measured by the 1990 survey, was 1,030 acre-feet between 1988 and 1990. The rate of consumption between 1986 and 1988 was 1,822 acre-feet according to the 1988 aerial survey.

Table 8 shows the remaining acre-feet of each metropolitan landfill from 1984 through 1991. The 1991 figures are based on landfill receiving rates as reported to the Department of Revenue because aerial flyover data was not available. In 1991 approximately 514,152 tons of waste was reported to have been disposed of in metropolitan landfills. This equates to approximately 745 acre-feet (one acre-foot equals approximate 1,613 cubic yards or 484 tons of solid waste) of landfill space used in 1991.

Table 8 REMAINING LANDFILL CAPACITY/AIR SPACE FROM AERIAL SURVEY DATA, 1984 - 1991 (In acre-feet*)					
Facility	1984	1986	1988	1990	1991
Anoka	756	24	20	661	588
Burnsville	2566	2098	1220	1141	1,004
Dakhue	207	50	closed	closed	closed
Flying Cloud	250	174	closed	closed	closed
Freeway	201	43	20	closed	closed
Louisville	595	504	758	closed	closed
Pine Bend	6797	5788	4783	4,251	3,788
Woodlake	874	598	656	374	302
<b>Total</b>	<b>12,246</b>	<b>9,279</b>	<b>7,457</b>	<b>6,427</b>	<b>5,682</b>
* One acre-foot equals 1,613.3 cubic yard					

Table 9 shows the amount of waste received at metropolitan land disposal facilities between 1986 and 1991 as reported by the MPCA and the Department of Revenue. In 1991, the amount of MSW landfilled within the region was 514,152 tons (based on 1 cu/yd equals 600 lbs.) - down from 647,530 tons in 1990. This represents a 21 percent reduction in wastes disposed of in metropolitan landfills in 1991 compared to 1990. The total amount of Metro Area MSW disposed of in landfills in and near the region during 1991 is estimated at 698,500 tons. This is substantially less than the Council's 1991 landfill limit of 1,437,000 tons.

Table 9 MSW RECEIVED AT METRO & SURROUNDING NON-METRO LANDFILLS 1986 - 1991 (in tons)						
Metro Disposal Facility	1986	1987	1988	1989	1990	1991
Anoka	286,178	207,818	78,528	45,668	64,663	52,042
Burnsville	199,830	280,001	329,106	308,945	103,756	97,039
Dakhue	56,160	41,416	13,968	closed	closed	closed
East Bethel	53,412	55,366	59,905	34,392	closed	closed
Flying Cloud	484,423	53,388	9,268	closed	closed	closed
Freeway	43,379	43,338	24,958	22,743	3,273	closed
Louisville	217,562	321,923	211,493	189,006	40,654	closed
Pine Bend	625,248	819,205	884,699	803,953	385,703	315,638
Woodlake	83,895	129,634	157,430	226,307	49,481	49,433
Metropolitan Area Landfills	2,050,087	1,952,089	1,769,355	1,631,014	647,530	514,152
Non-Metro Disposal Facility	1986	1987	1988	1989	1990	1991
Elk River	159,242	119,026	165,604	142,206	90,946	70,532
McLeod	27,520	30,513	53,673	75,835	63,023	119,344
Ponderosa	51,741	52,395	53,212	55,477	57,742	53,694
Rice	38,448	41,003	40,619	37,500	34,171	27,712
Sun Prairie	N/A	N/A	374	1,668	1,312	943
Tellijohn	27,605	34,170	33,717	39,000	39,615	40,280
Yonak	56,782	54,174	61,842	46,251	51,415	62,715
Surrounding Non-metro landfills	361,338	331,281	409,041	397,937	338,224	375,220
Metro Area landfill figures were provided by the Department of Revenue (600 pounds per cubic yard were used to convert cubic yards to tons). The above figures are the total amount of waste received at disposal facilities as reported to the Department of Revenue and MPCA.						
Source: Minnesota Pollution Control Agency (non-metro); Department of Revenue (metro)						

Disposal at less than half the Council landfill limit is a notable achievement despite the fact that the limit left some leeway for disposal of unmarketable recyclables and waste stemming from interruptions



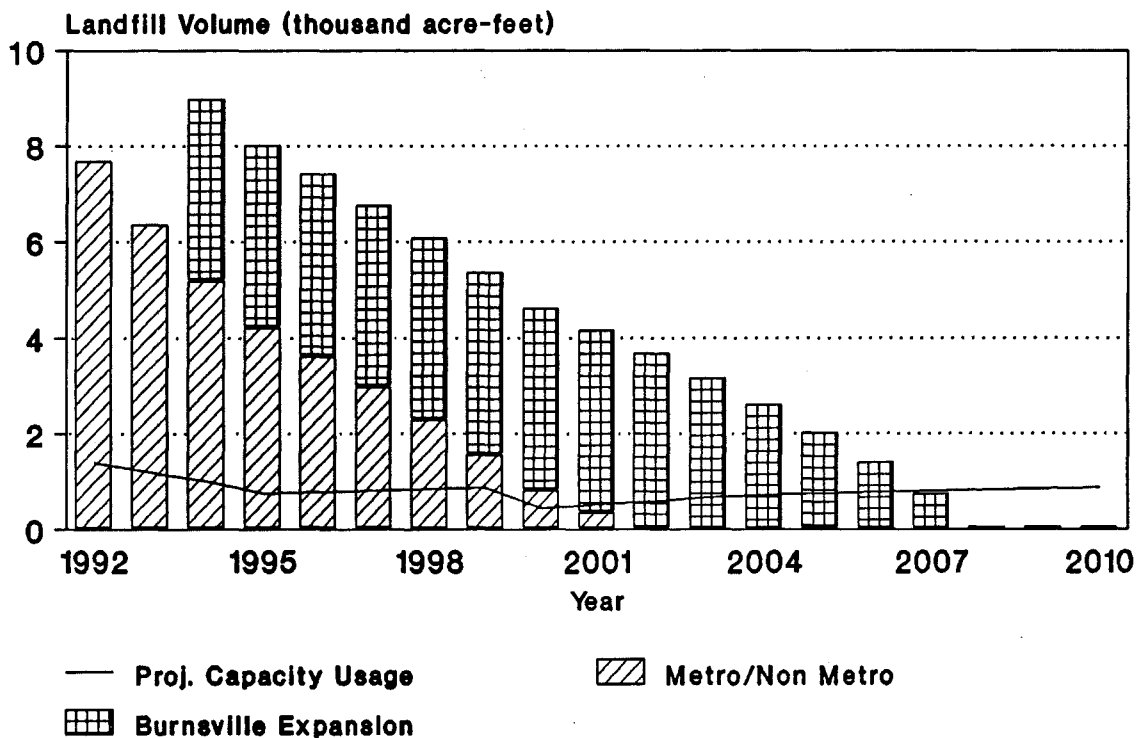
of resource recovery facilities. It is not clear how much of the reduction in disposal resulted from increases in recycling and how much from the effects of the recession. Other possible factors include export to unlined landfills outside the region prior to the ban on metro disposal in unlined landfills outside the region commencing in 1992. Separation of materials for disposal as demolition debris could not have been significant because the waste composition study conducted jointly with the MPCA indicated that demolition disposal within the region declined about ten percent from 1990 to 1991.

## ISSUES - LANDFILLS

The rate at which the Metropolitan Area is consuming regional landfill capacity appears to have decreased significantly as more processing facilities have come on line and recycling and waste reduction efforts have been successful. This trend is expected to continue as additional processing facilities are constructed and recycling programs continue to improve. The requirement that unprocessed metropolitan waste be prohibited from disposal in unlined landfills outside the region after Jan. 1, 1992, has temporarily limited the export of waste to a single nonmetro landfill located at Elk River. Consequently, disposal of metro waste in Minnesota landfills outside the region is likely to decline in 1992 and remain at a lower level until lined cells are completed.

As figure 7 illustrates, assuming that landfill use rates decline as projected and recycling objectives continue to be met, the region will exhaust remaining capacity by 2007.

**Figure 7**  
**Projected Regional MSW Landfill Use and**  
**Metro and Non Metro Landfill Capacities**



Capacity life will be affected by many factors beyond the ability of the public sector to control. Private investment may add capacity. Facilities may close prematurely, particularly if they are unable to obtain sufficient tipping fee revenue to meet operating, environmental protection and financial responsibility requirements. Increased success in diverting resource recovery facility rejects and residuals for secondary processing in place of land disposal will adversely affect the financial health of landfills.

Surcharges for land disposal of Metro Area waste ranged between 46 and 51 percent of the total tipping fees collected - approximately \$18,000,000. Currently, a small part of these funds support landfill cleanup through county and city set-asides and the Metropolitan Landfill Contingency Action Fund for closure and post-closure care of Metro Area landfills. A significant part of the surcharge revenue is assigned to the general funds of cities and counties. A portion of these monies also funds the Council's abatement grant and loan program.

Policy 1A in the Council's solid waste policy plan states that an environmental protection fee should be added to land disposal tipping fees to pay for all environmental protection costs. These costs include the removal of toxics from the waste stream and encouraging generators to participate further in waste reduction efforts. In addition, the plan indicates that costs should be allocated equitably to waste generators. The long-term allocation of land disposal revenues to activities not directly related to land disposal may prove to be counterproductive. Substantial fees for unrelated activities deter the financing of landfill cleanup and post-closure maintenance. The surcharges artificially place local landfills at a competitive disadvantage with landfills that do not require the same fees. Thus landfills outside the state and, to a much lesser extent, those in outstate Minnesota, are able to attract business from the Metro Area landfills with the highest financial responsibility standards for environmental protection.

## **CONCLUSIONS - LANDFILLS**

Dramatic reductions in the disposal volume of Metro Area MSW have occurred. Further reductions in the disposal of unprocessed or processed wastes are anticipated through continued implementation of an integrated waste management system committed to managing each component of the waste stream with methods that rank as high in the waste management hierarchy as possible. The disposal volumes of Metro Area MSW, even at reduced levels, however, will continue to be substantial. Consequently, the Council is promoting a waste management fee to be collected at landfills to pay for the costs of protecting the environment from landfill contamination. The higher fee at landfills is also intended to encourage greater waste reduction efforts.

A transition may be warranted to cap the compensation to local communities for hosting a landfill and direct remaining surcharges to landfill cleanup measures like the contingency action fund and the Council's proposed environmental protection fee. This will increase equity for waste generators by limiting expenditures not directly related to the disposal service they receive and reducing or eliminating disparate charges to generators based on where they generate instead of the amounts and types of waste they generate.

# COUNTY REPORTS

## COUNTY CERTIFICATION REPORTS

The Minnesota Legislature banned the disposal of unprocessed MSW in landfills located in the Metropolitan Area after Jan. 1, 1990. Exceptions are allowed if counties certify waste as unprocessable or waste is transferred from a resource recovery facility that certifies the waste is unprocessable and that no other regional facility is capable of processing the waste.

Minnesota statutes require that waste certification reports from each Metropolitan Area county be submitted to and approved by the Council semi-annually. Counties are required to provide detailed documentation of the management of waste generated and collected within their boundaries.

## DATA - WASTE CERTIFICATION REPORTS

Summary data for the past year is reported in the following table. County-reported waste management was about five percent less than the tonnage forecast by the Council. The difference can be attributed almost entirely to waste that was exported to landfills outside the region and not reported by the counties. Also, recessionary business conditions undoubtedly reduced the overall level of waste generation.

Table 10 COUNTY WASTE CERTIFICATION REPORT SUMMARY - 1991								
1991	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Total
County Generation	222,100	43,000	280,000	1,337,817	495,352	67,597	153,139	2,599,005
Recycling	90,444	18,076	112,412	617,438	198,737	30,402	44,344	1,111,853
Waste Delivered	129,567	0	0	713,746	284,453	0	105,208	1,232,974
Separately Managed	7,577	1,503	8,612	31,661	14,880	1,822	4,591	70,646
Rejects	3,405	0	0	7,916	106	0	39	11,466
Residuals	24,829	0	0	84,958	42,191	0	15,605	167,583
Ash	20,590	0	0	142,957	23,498	0	8,691	195,736
Processed Disposal	48,824	0	0	235,831	65,795	0	24,335	374,785
Facility Excess	0	0	0	27,033	47,135	0	17,434	91,602
Unprocessed Disposal	0	23,421	158,976	27,033	47,135	35,373	17,434	309,372
Est. Total Disposal	48,824	23,421	158,976	262,864	112,930	35,373	41,769	684,157

The land disposal of unprocessed waste during 1991 continued a declining trend despite the fact that no new processing facilities were established. Increases in reduction and recycling activities combined with recessionary business conditions to produce this result. The table below identifies the proportions of the waste stream managed by recycling, processing and disposal. The recycling percentages have risen from the level reported last year an average of four percent while the processing declined a percentage point and land disposal fell three percent.

Table 11 MSW REPORTED AS MANAGED BY METROPOLITAN COUNTIES, 1991 (tons)							
County	Materials Recovery	percent	Energy Recovery	percent	Landfill	percent	Total Managed
Anoka	90,444	41%	82,832	37%	48,824	22%	222,100
Carver	18,076	42%	1,503	4%	23,421	54%	43,000
Dakota	112,412	40%	8,612	3%	158,976	57%	280,000
Hennepin	617,438	46%	457,514	34%	262,864	20%	1,337,816
Ramsey	198,737	40%	183,685	37%	112,931	23%	495,353
Scott	30,402	45%	1,822	3%	35,373	52%	67,597
Washington	44,344	29%	67,026	44%	41,769	27%	153,139
<b>County MSW Managed</b>	<b>1,111,853</b>	<b>43%</b>	<b>802,994</b>	<b>31%</b>	<b>684,158</b>	<b>26%</b>	<b>2,599,005</b>

SOURCE: County Recycling Progress Reports, Certification Reports, March and August 1992

The Council's criteria for evaluating county efforts to abate waste disposal focus on whether both the progress and commitment are sufficient to demonstrate that landfill abatement goals will be achieved. Although the Council criteria address all strategies of landfill abatement, the statutory review authority extends only to whether waste is processed by at least a single operation to recover reusable resources. Consequently, the initiation of secondary processing, such as the scheduled composting of residuals from the refuse-derived-fuel process, cannot currently be a basis for evaluating the county reports.

Certification reports must be comprehensive in order to evaluate potential system changes. Ideally they should address all wastes that could at any time become subject to the restriction on disposal. Better data is important because the distinction between MSW and separated waste streams can change based on the constituents of separated waste and the facilities where waste can legally be disposed. The Council will continue working with the counties on procedures for expediting reporting on unprocessed waste of all types consistent with the expansion of waste designation authority by the legislature this year. With Council approval, counties currently have the authority to expand their designation ordinances to manage non-MSW materials. The Council is currently studying these waste streams and county cooperation in obtaining information may be critical in providing the oversight anticipated in waste designation and certification authority. Information reported to counties in conjunction with facility licenses may prove to be an important resource in this regard.

The Council's abatement expectations address anticipated waste stream growth. The Council has

scheduled 1,194,000 tons per year of recycling by 1995. The counties reported 1,111,900 tons of materials recovery during 1991. Due to waste stream growth, materials recovery will have to increase to approximately 1,617,000 tons to meet the goal for 2000. The Council policy plan suggests that continued expansion of source separation initiatives alone is not likely to succeed in reaching the 50 percent recovery goal for 2000. Although current reported recovery was at an acceptable level, new commitments will be necessary to foster more waste reduction and change the system to dramatically increase recycling accomplishments.

Certification is not currently used as an operational control to ensure that unprocessed waste is not unnecessarily land disposed. The counties with waste designation authority have relied primarily on contracts to direct waste flows between facilities with capacity to accept waste. The focus of certification reports on processing facility records does not provide enough information to determine the actual volume of unprocessed waste disposal. Monitoring of intake at landfills would be necessary to use certification as a communications tool to discourage the unnecessary disposal of any unprocessed waste.

Certification reporting every six months has proven to be an excessive drain on the staff resources of the counties and the Council. Annual reports would reduce the time commitment without necessarily sacrificing the capability to provide the desired oversight.

## **CONCLUSIONS - WASTE CERTIFICATION REPORTS**

Reported disposal volumes have fallen dramatically and have achieved the Council's landfill limits. New recycling program commitments will, however, be necessary to achieve the 50 percent recovery level indicated for 2000.

Although reported land disposal volumes are well within specified limits, continued attention is warranted. Reporting should address ash disposal and estimate the volume of waste not sent to processing facilities prior to disposal. Wastes that could be disposed of as MSW in the future should also be reported. The counties should establish monitoring measures at landfills to identify the actual volumes of land disposal and assure that waste is not land disposed if processing capacity is reasonably available.

Efforts to establish processing capacity were on schedule during 1991, but have since fallen behind in three counties. The Dakota County incinerator was delayed by the MPCA, and Carver and Scott counties have terminated their joint MSW compost project. The delay over permitting the Dakota project may be resolved, but recent court decisions have undermined waste designation as a tool to assure waste flows and the financial viability of the planned resource recovery facilities. The three counties are being encouraged to continue efforts to develop or contract for scheduled processing capacity and, in the interim, aggressively promote the use of reasonably available processing facilities before local waste is allowed to be land disposed. MSW compost projects in Wright County and the East Central plant in Mora are each seeking substantial waste volumes that could be supplied from the Metro Area.

## **OTHER COUNTY REPORTS**

The Council is required to collect a number of reports from the counties each year. In turn, the Council has been instructed by law to make several annual reports to the Legislative Commission on Waste Management (LCWM). A description of the reports is provided by the following tables. It is time to reconsider these reporting requirements.

Table 12  
**COUNTY REPORTS TO THE COUNCIL**

Report Name	Reporting Period	Contents
County Annual Reports 473.823, subd. 6	March 15 and August 15	Waste managed, rates and charges, current programs, types of waste managed, land disposal capacity, progress toward meeting Council goals, unprocessed waste quantities, county budget and staffing
Certification Reports 473.848, subd. 2	March 15 and August 15	Waste managed, types of waste managed, progress toward meeting Council goals, unprocessed waste quantities, plans made and actions taken to reduce disposal of unprocessed waste
LRDG Reports 473.8441 subd. 5	March 1 and August 1	Programs and activities that are funded by the LRDG grant and matching funds used by the counties. Copies of materials prepared under the grant.

Table 13  
**COUNCIL REPORTS TO THE LEGISLATURE**

Report Name	Reporting Period	Report Contents
Abatement Progress Report 473.149, subd. 6	November 1	Abatement progress, goal attainment, program specific performance, analysis of system, recommendations for legislation to ensure system will meet goals
SCORE Report 115A.551, subd. 4	November 15	Assessment of how SCORE funds are spent and recycling rates attained county by county
Abatement Program Work Program and Budget 1991, ch. 254, Art. 1, Sec. 2, Subd.4	July 1	Budget for distribution of grant funds, estimated receipts and disbursements by program
Abatement Fund Expenditures and Activities Report 473.846	November 1	Expenditure of grant funds in the previous fiscal year and work program changes for current fiscal year
Cost and Finance Report 473.149 Subd. 6	November 1 alternate years	Costs and expenses of operating solid waste system, changes in costs, methods to pay for services and allocation of costs, analysis of major facility costs

Many of the major elements in the Council's *Solid Waste Management Policy Plan/Development Guide* have been implemented by the counties. Other aspects of the Council's plan, including development of the regional Solid Waste Authority, will require more time. The Council has indicated that continued progress in abating the use of landfills should be approached on a regional basis. The time frames needed for action by a regional confederation of counties will likely be longer than those needed for unilateral action on the part of a single county. Thus, the pace of change in the region's solid waste management system has slowed significantly since 1984 when many of the current reporting requirements were enacted. At this juncture, a shift to annual reports from the counties on solid waste issues would provide ample opportunity for the Council to exercise its oversight role in the development of the regional solid waste management system.

Each year the counties are required to make six separate reports to the Council and one to the Office of Waste Management: semi-annual certification reports; semi-annual county solid waste management reports, semi-annual Local Recycling Development Grants reports; and the SCORE report. The Council has established reporting requirements for each of these reports, but the specific requirements of each report do not allow a comprehensive view of the progress being made in implementing the solid waste management system. A single annual report would provide more coherent information for assessing the development of the regional system.

The counties frequently submit the reports late due to competition for staff time from other waste management needs within the county. The counties have estimated that four full-time equivalent positions have been devoted to developing the information and reports required of them under the current law. Moving to a single annual report requirement would reduce the reporting burden on the counties and free three county full-time equivalents to work on other projects.

The Council's work load would also be reduced. Instead of reviewing six reports a year, only one report would require review. That single report would include all of the information necessary to evaluate the progress the counties are making to reduce the use of land disposal for waste. It would give a concise and complete view of the management of solid waste. The certification review would have added significance in relationship to the overall management of waste in a county. The tonnage data currently required by semi-annual solid waste management reports would be combined with other data about programs and costs. The Council could then submit one annual report to the LCWM, the *Abatement Progress Report*, which would be the definitive analysis of the progress the region has made toward cost-effective and environmentally safe waste management.

## CONCLUSIONS - OTHER REPORTS

Requirements for county reports to the Council should be consolidated and integrated with a single *Abatement Progress Report* from the Council to the legislature.





## **APPENDIX A**

**WASTE GENERATION AND RECYCLING DATA  
FIRST HALF 1992**



TOTALS - ANOKA CO.

DATE: 1/01/92 THRU 6/30/92

RECYCLED TONS BY MATERIAL (Use attached conversion table)	Documented Residential Collection	Documented Commercial/Industrial	Non-Documented Commercial/Industrial	Mechanical and Hand - Separated
<b>PAPER:</b>				
Corrugated Cardboard	386.84	37.63	3809.06	0
Newsprint	4205.55	8.65	576.73	0
Magazine Paper	53.35	1.44	0	0
Office Paper	6.41	66.34	473.85	0
Mixed Grades	109.95	325.13	1293.02	0
Phone Books	13.27	2.64	0	0
Computer Paper	0.5	0	0	0
Other Paper	0	9.07	0	0
Other Paper	0	0	0	0
Subtotal	4775.87	450.9	6152.66	0
<b>METAL:</b>				
Aluminum Food/Beverage Cans & Foil	82.56	3.49	0	0
Steel/Tin Cans	74.58	7.85	0	0
Commingled Aluminum/Steel/Tin Cans	464.16	0.23	301.41	0
Other Metal: Ferrous & Non-Ferrous	306.32	3.3	12423.85	2469
Subtotal	927.62	14.87	12725.26	2469
<b>GLASS:</b>				
Food & Beverage Container	1271.61	0.57	147.81	0
Other Glass	90.07	0.1	0	0
Subtotal	1361.68	0.67	147.81	0
<b>PLASTICS:</b>				
PET (SPI Code 1)	0.79	0	0	0
HDPE (SPI Code 2)	7.95	0	0	0
Commingled-Mixed Plastics	217.05	0.12	377.67	0
Polystyrene (SPI Code 6)	0	0	0	0
Film Plastics	0	0	0	0
Other Resin Type	8.8	0	0	0
Subtotal	234.59	0.12	377.67	0
<b>ORGANICS:</b>				
Yard Waste	13487.96	0	617.66	0
Tree/Brush/Shrub Waste	1669.08	0	848.06	0
Commingled Yard/Tree/Brush/Shrub Waste	226.83	0	0	0
Food (only if used as animal feed)	0	0	779.53	0
Subtotal	15383.87	0	2245.25	0
<b>OTHER RECYCLABLES:</b>				
Vehicle Batteries*	440.65	0	297.92	0
Major Appliances*	877.5	0	62.5	0
Used Oil*	59.68	0.8	0	0
Waste Tires*	99.47	0	0	0
Household Batteries	0	0	0	0
Textiles	14.59	0	4.55	0
Carpet	4.85	0	0	0
Unspecified/Commingled Recyclables	12.7	0	1.08	0
Other (specify)_TIRE RIMS/ANTIFREEZE_	3.25	49.04 **	0	0
Other (specify)_GOODWILL_	12.87	0	0	0
Subtotal	1525.56	49.84	366.05	0
<b>TOTAL</b>	<b>24209.19</b>	<b>516.4</b>	<b>22014.7</b>	<b>2469</b>

\* SE. \*\*Metal/Glass/Plastic beverage containers from several school systems.

TOTAL RECYCLING 49209.29

TOTALS - CARVER CO.

DATE: 1/01/92 THRU 6/30/92

RECYCLED TONS BY MATERIAL (Use attached conversion table)	Documented Residential Collection	Documented Commercial/Industrial	Non-Documented Commercial/Industrial	Mechanical and Hand - Separated
<b>PAPER:</b>				
Corrugated Cardboard	184.16	490.95	0	0
Newsprint	839.5	11.02	0	0
Magazine Paper	0	0	0	0
Office Paper	0.63	38	0	0
Mixed Grades	0	0	0	0
Phone Books	0	0	0	0
Computer Paper	0	0	0	0
Other Paper	0	0	0	0
Other Paper	0	0	0	0
Subtotal	1024.29	539.97	0	0
<b>METAL:</b>				
Aluminum Food/Beverage Cans & Foil	75.51	0	0	0
Steel/Tin Cans	71.69	1.4	0	0
Commingled Aluminum/Steel/Tin Cans	53.11	3.39	0	0
Other Metal: Ferrous & Non-Ferrous	0	0	0	0
Subtotal	200.31	4.79	0	0
<b>GLASS:</b>				
Food & Beverage Container	374.94	10.37	0	0
Other Glass	0	0	0	0
Subtotal	374.94	10.37	0	0
<b>PLASTICS:</b>				
PET (SPI Code 1)	0	0	0	0
HDPE (SPI Code 2)	0	0.18	0	0
Commingled-Mixed Plastics	24.84	0.03	0	0
Polystyrene (SPI Code 6)	10.85	0	0	0
Film Plastics	0	0	0	0
Other Resin Type	0	0	0	0
Subtotal	35.69	0.21	0	0
<b>ORGANICS:</b>				
Yard Waste	10.04	0	0	0
Tree/Brush/Shrub Waste	0.54	0	0	0
Commingled Yard/Tree/Brush/Shrub Waste	0	0	0	0
Food (only if used as animal feed)	0	0	0	0
Subtotal	10.58	0	0	0
<b>OTHER RECYCLABLES:</b>				
Vehicle Batteries*	146.46	0	0	0
Major Appliances*	186.4	0	0	0
Used Oil*	11.83	0	0	0
Waste Tires*	19.72	0	0	0
Household Batteries	0	0	0	0
Textiles	0	0	0	0
Carpet	0	0	0	0
Unspecified/Commingled Recyclables	0	0	0	0
Other (specify) Goodwill	3.6	2	0	0
Other (specify)	0	0	0	0
Subtotal	368.02	2	0	0
<b>TOTAL</b>	<b>2013.81</b>	<b>557.34</b>	<b>0</b>	<b>0</b>

\* SE.

TOTAL RECYCLING 2571.16

TOTALS - DAKOTA CO.

DATE: 1/01/92 THRU 6/30/92

RECYCLED TONS BY MATERIAL (Use attached conversion table)	Documented Residential Collection	Documented Commercial/Industrial	Non-Documented Commercial/Industrial	Mechanical and Hand - Separated
<b>PAPER:</b>				
Corrugated Cardboard	203.6	514.36	0	0
Newsprint	5781.48	102.1	0	0
Magazine Paper	65.61	0	0	0
Office Paper	10.38	285.79	0	0
Mixed Grades	74.26	6.29	0	0
Phone Books	22	2	0	0
Computer Paper	0	0	0	0
Other Paper	0	0	0	0
Other Paper	0	0	0	0
Subtotal	6157.33	910.54	0	0
<b>METAL:</b>				
Aluminum Food/Beverage Cans & Foil Steel/Tin Cans	258.82	14.13	0	0
Commingled Aluminum/Steel/Tin Cans	7.66	18.84	0	0
Other Metal: Ferrous & Non-Ferrous	634	0.11	0	0
Subtotal	1200.15	9.84	0	0
	2100.63	42.92	0	0
<b>GLASS:</b>				
Food & Beverage Container	2354.18	24.2	0	0
Other Glass	0	0	0	0
Subtotal	2354.18	24.2	0	0
<b>PLASTICS:</b>				
PET (SPI Code 1)	0	0	0	0
HDPE (SPI Code 2)	0	0	0	0
Commingled-Mixed Plastics	253.61	8.64	0	0
Polystyrene (SPI Code 6)	0	4.2	0	0
Film Plastics	0	0	0	0
Other Resin Type	0	0	0	0
Subtotal	253.61	12.84	0	0
<b>ORGANICS:</b>				
Yard Waste	0	0	0	0
Tree/Brush/Shrub Waste	0	0	0	0
Commingled Yard/Tree/Brush/Shrub Waste	4992.36	0	0	0
Food (only if used as animal feed)	0	963.34	0	0
Subtotal	4992.36	963.34	0	0
<b>OTHER RECYCLABLES:</b>				
Vehicle Batteries*	840.11	0	0	0
Major Appliances*	1068.34	0	0	0
Used Oil*	67.83	0	0	0
Waste Tires*	141.31	0	0	0
Household Batteries	1.12	0	0	0
Textiles	142.7	0	0	0
Carpet	0	0	0	0
Unspecified/Commingled Recyclables	914.31	0.48	25726.3	0
Other (specify)	0	0	0	0
Other (specify)	0	0	0	0
Subtotal	3175.72	0.48	25726.3	0
<b>TOTAL</b>	<b>19033.83</b>	<b>1954.32</b>	<b>25726.3</b>	<b>0</b>

\* SE. \*\* BFI estimates.

TOTAL RECYCLING 46714.45

TOTALS - HENNEPIN CO.

DATE: 1/01/92 THRU 6/30/92

RECYCLED TONS BY MATERIAL (Use attached conversion table)	Documented Residential Collection	Documented Commercial/Industrial	Non-Documented Commercial/Industrial	Mechanical and Hand - Separated
<b>PAPER:</b>				
Corrugated Cardboard	1512.2	371	0	1322
Newsprint	24364.4	166	0	121
Magazine Paper	341	1	0	0
Office Paper	367.6	856	0	0
Mixed Grades	227.4	236	0	0
Phone Books	72	67	0	0
Computer Paper	0	9	0	0
Other Paper	0	0	0	0
Other Paper	0	0	0	0
Subtotal	26884.6	1706	0	1443
<b>METAL:</b>				
Aluminum Food/Beverage Cans & Foil	1336.5	16	0	0
Steel/Tin Cans	1376.4	16	0	0
Commingled Aluminum/Steel/Tin Cans	731.8	18	0	3
Other Metal: Ferrous & Non-Ferrous	1220.3	239	0	10560
Subtotal	4665	289	0	10563
<b>GLASS:</b>				
Food & Beverage Container	9260.7	37	0	28
Other Glass	0	0	0	0
Subtotal	9260.7	37	0	28
<b>PLASTICS:</b>				
PET (SPI Code 1)	0	0	0	0
HDPE (SPI Code 2)	0	0	0	0
Commingled-Mixed Plastics	1256.1	11	0	112
Polystyrene (SPI Code 6)	0	0	0	0
Film Plastics	0	0	0	0
Other Resin Type	0	0	0	0
Subtotal	1256.1	11	0	112
<b>ORGANICS:</b>				
Yard Waste	55325.4	143	0	0
Tree/Brush/Shrub Waste	7747	0	0	0
Commingled Yard/Tree/Brush/Shrub Waste	0	0	0	0
Food (only if used as animal feed)	0	0	0	0
Subtotal	63072.4	143	0	0
<b>OTHER RECYCLABLES:</b>				
Vehicle Batteries	3066.2	0	0	0
Major Appliances	3788.4	6	0	109
Used Oil	248	0	0	0
Waste Tires	413	0	0	0
Household Batteries	22.4	0	0	0
Textiles	0	0	0	0
Carpet	13	0	0	0
Unspecified/Commingled Recyclables	1155.9	8075	194725	0
Other (specify) Electronics	3.1	0	0	0
Other (specify) Xmas Trees/Wood Waste	653.5	8	0	0
Subtotal	9363.5	8089	194725	109
<b>TOTAL</b>	<b>114502.3</b>	<b>10275</b>	<b>194725</b>	<b>12255</b>

TOTAL RECYCLING 331757.3

TOTALS - RAMSEY CO.

DATE: 1/01/92 THRU 6/30/92

RECYCLED TONS BY MATERIAL (Use attached conversion table)	Documented Residential Collection	Documented Commercial/Industrial	Non-Documented Commercial/Industrial	Mechanical and Hand - Separated
<b>PAPER:</b>				
Corrugated Cardboard	844.02	58.25	0	93.25
Newsprint	9431.6	110.35	0	21.53
Magazine Paper	512.77	3.35	0	1.86
Office Paper	6.68	456.59	0	1.81
Mixed Grades	2.71	378.9	0	0
Phone Books	0	24.24	0	0
Computer Paper	0	22.29	0	0
Other Paper	548.86	0.61	0	0
Other Paper	0	0	0	0
Subtotal	11346.64	1054.58	0	118.45
<b>METAL:</b>				
Aluminum Food/Beverage Cans & Foil	912.03	0	0	0
Steel/Tin Cans	130.95	0.02	0	0
Commingled Aluminum/Steel/Tin Cans	903.65	9.12	0	0
Other Metal: Ferrous & Non-Ferrous	2060.72	0	0	4076.66
Subtotal	4007.35	9.14	0	4076.66
<b>GLASS:</b>				
Food & Beverage Container	3510.58	8.28	0	14.92
Other Glass	0	0	0	0
Subtotal	3510.58	8.28	0	14.92
<b>PLASTICS:</b>				
PET (SPI Code 1)	0	0	0	0
HDPE (SPI Code 2)	0	0	0	0
Commingled-Mixed Plastics	150.15	0.2	0	0
Polystyrene (SPI Code 6)	0	19.09	0	0
Film Plastics	0	0	0	0
Other Resin Type	0	0	0	0
Subtotal	150.15	19.29	0	0
<b>ORGANICS:</b>				
Yard Waste	21694	0	0	0
Tree/Brush/Shrub Waste	3178	0	0	0
Commingled Yard/Tree/Brush/Shrub Waste	0	0	0	0
Food (only if used as animal feed)	0	1220.54	0	0
Subtotal	24872	1220.54	0	0
<b>OTHER RECYCLABLES:</b>				
Vehicle Batteries	1450	0	0	0
Major Appliances	2308	0	0	0
Used Oil	116.73	0	0	0
Waste Tires	195	0	0	0
Household Batteries	0	0	0	0
Textiles	106.71	0	0	0
Carpet	0	15	0	0
Unspecified/Commingled Recyclables	1441.59	246.59	68010.63	40
Other (specify)	131.78	0	0	0
Other (specify)	44	0	0	0
Subtotal	5793.81	261.59	68010.63	40
<b>TOTAL</b>	<b>49680.53</b>	<b>2573.42</b>	<b>68010.63</b>	<b>4250.03</b>

TOTAL RECYLING 124514.61

TOTALS - SCOTT CO.

DATE: 1/01/92 THRU 6/30/92

RECYCLED TONS BY MATERIAL (Use attached conversion table)	Documented Residential Collection	Documented Commercial/Industrial	Non-Documented Commercial/Industrial	Mechanical and Hand - Separated
<b>PAPER:</b>				
Corrugated Cardboard	667.41	0	0	0
Newsprint	895.48	0	0	0
Magazine Paper	0.52	0	0	0
Office Paper	91.76	0	0	0
Mixed Grades	0	0	0	0
Phone Books	0	0	0	0
Computer Paper	0	0	0	0
Other Paper	0	0	0	0
Other Paper	0	0	0	0
Subtotal	1655.17	0	0	0
<b>METAL:</b>				
Aluminum Food/Beverage Cans & Foil	86.51	0	0	0
Steel/Tin Cans	45.21	0	0	0
Commingled Aluminum/Steel/Tin Cans	0	0	0	0
Other Metal: Ferrrous & Non-Ferrous	48.2	0	0	0
Subtotal	179.92	0	0	0
<b>GLASS:</b>				
Food & Beverage Container	333.23	0	0	0
Other Glass	0	0	0	0
Subtotal	333.23	0	0	0
<b>PLASTICS:</b>				
PET (SPI Code 1)	0	0	0	0
HDPE (SPI Code 2)	0	0	0	0
Commingled-Mixed Plastics	32.23	0	0	0
Polystyrene (SPI Code 6)	0	0	0	0
Film Plastics	0	0	0	0
Other Resin Type	0	0	0	0
Subtotal	32.23	0	0	0
<b>ORGANICS:</b>				
Yard Waste	0	0	0	0
Tree/Brush/Shrub Waste	0	0	0	0
Commingled Yard/Tree/Brush/Shrub Waste	0	0	0	0
Food (only if used as animal feed)	0	0	0	0
Subtotal	0	0	0	0
<b>OTHER RECYCLABLES:</b>				
Vehicle Batteries*	177.56	0	0	0
Major Appliances (69 Units reported)	0.26	0	0	0
Used Oil	14.35	0	0	0
Waste Tires*	23.91	0	0	0
Household Batteries	0	0	0	0
Textiles	0	0	0	0
Carpet	0	0	0	0
Unspecified/Commingled Recyclables	0	0	0	0
Other (Specify)	0	0	0	0
Other (Specify)	0	0	0	0
Subtotal	216.08	0	0	0
<b>TOTAL</b>	<b>2416.63</b>	<b>0</b>	<b>0</b>	<b>0</b>

\* SE.

TOTAL RECYCLING 2803.45



TOTALS - WASHINGTON CO.

DATE: 1/01/92 THRU 6/30/92

RECYCLED TONS BY MATERIAL (Use attached conversion table)	Documented Residential Collection	Documented Commercial/Industrial	Non-Documented Commercial/Industrial	Mechanical and Hand-Separated
<b>PAPER:</b>				
Corrugated Cardboard	268.83	10	0	0
Newsprint	2759.33	1.5	0	0
Magazine Paper	25.77	0	0	0
Office Paper	0.7	20.78	0	0
Mixed Grades	25.02	22.45	0	0
Phone Books	0	0	0	0
Computer Paper	0	0	0	0
Other Paper	0	0	0	0
Other Paper	0	0	0	0
<b>Subtotal</b>	<b>3079.65</b>	<b>54.73</b>	<b>0</b>	<b>0</b>
<b>METAL:</b>				
Aluminum Food/Beverage Cans & Foil	268.9	0.3	0	0
Steel/Tin Cans	211.42	0	0	0
Commingled Aluminum/Steel/Tin Cans	0	0.69	0	0
Other Metal: Ferrous & Non-Ferrous	331.17	0	0	1484.73
<b>Subtotal</b>	<b>811.49</b>	<b>0.99</b>	<b>0</b>	<b>1484.73</b>
<b>GLASS:</b>				
Food & Beverage Container	1028.79	0.26	0	0
Other Glass	0	0	0	0
<b>Subtotal</b>	<b>1028.79</b>	<b>0.26</b>	<b>0</b>	<b>0</b>
<b>PLASTICS:</b>				
PET (SPI Code 1)	2.8	0.03	0	0
HDPE (SPI Code 2)	5.4	0	0	0
Commingled-Mixed Plastics	97.48	0	0	0
Polystyrene (SPI Code 6)	0	0	0	0
Film Plastics	0	0	0	0
Other Resin Type	0	0	0	0
<b>Subtotal</b>	<b>105.68</b>	<b>0.03</b>	<b>0</b>	<b>0</b>
<b>ORGANICS:</b>				
Yard Waste	2692.56	0	0	0
Tree/Brush/Shrub Waste	0	0	0	0
Commingled Yard/Tree/Brush/Shrub Waste	0	0	0	0
Food (only if used as animal feed)	0	0	0	0
<b>Subtotal</b>	<b>2692.56</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>OTHER RECYCLABLES:</b>				
Vehicle Batteries*	447.47	0	0	0
Major Appliances*	569.51	0	0	0
Used Oil*	36.16	0	0	0
Waste Tires*	60.27	0	0	0
Household Batteries	0	0	0	0
Textiles	0	0	0	0
Carpet	0	0	0	0
Unspecified/Commingled Recyclables	597.35	0	10278	0
Other (specify)	0	0	0	0
Other (specify)	0	0	0	0
<b>Subtotal</b>	<b>1710.76</b>	<b>0</b>	<b>10278</b>	<b>0</b>
<b>TOTAL</b>	<b>9428.93</b>	<b>56.01</b>	<b>10278</b>	<b>1484.73</b>

\* SE.

TOTAL RECYCLING

21247.67

TOTALS FOR ALL THE COUNTIES

DATE: 1/1/92 THRU 6/30/92

RECYCLED TONS BY MATERIAL (Use attached conversion table)	Documented Residential Collection	Documented Commercial/Industrial	Non-Documented Commercial/Industrial	Mechanical and Hand-Separated
<b>PAPER:</b>				
Corrugated Cardboard	4067.06	1482.19	3809.06	1415.25
Newsprint	48277.34	399.62	576.73	142.53
Magazine Paper	999.02	5.79	0	1.86
Office Paper	484.16	1723.5	473.85	1.81
Mixed Grades	439.34	968.77	1293.02	0
Phone Books	107.27	95.88	0	0
Computer Paper	0.5	31.29	0	0
Other Paper	548.86	9.68	0	0
Other Paper	0	0	0	0
<b>Subtotal</b>	<b>54923.55</b>	<b>4716.72</b>	<b>6152.66</b>	<b>1561.45</b>
<b>METAL:</b>				
Aluminum Food/Beverage Cans & Foil	3020.83	33.92	0	0
Steel/Tin Cans	1917.91	44.11	0	0
Commingled Aluminum/Steel/Tin Cans	2786.72	31.54	301.41	3
Other Metal: Ferrous & Non-Ferrous	5166.86	252.14	12423.85	18590.39
<b>Subtotal</b>	<b>12892.32</b>	<b>361.71</b>	<b>12725.26</b>	<b>18593.39</b>
<b>GLASS:</b>				
Food & Beverage Container	18134.03	80.68	147.81	42.92
Other Glass	90.07	0.1	0	0
<b>Subtotal</b>	<b>18224.1</b>	<b>80.78</b>	<b>147.81</b>	<b>42.92</b>
<b>PLASTICS:</b>				
PET (SPI Code 1)	3.59	0.03	0	0
HDPE (SPI Code 2)	13.35	0.18	0	0
Commingled/Mixed Plastics	2031.46	19.99	377.67	112
Polystyrene (SPI Code 6)	10.85	23.29	0	0
Film Plastics	0	0	0	0
Other Resin Type	8.8	0	0	0
<b>Subtotal</b>	<b>2068.05</b>	<b>43.49</b>	<b>377.67</b>	<b>112</b>
<b>ORGANICS:</b>				
Yard Waste	93209.96	143	617.66	0
Tree/Brush/Shrub Waste	12594.62	0	848.06	0
Commingled Tree/Brush/Shrub Waste	5219.19	0	0	0
Food (only if used as animal feed)	0	2183.88	779.53	0
<b>Subtotal</b>	<b>111023.77</b>	<b>2326.88</b>	<b>2245.25</b>	<b>0</b>
<b>OTHER RECYCLABLES:</b>				
Vehicle Batteries	6568.45	0	297.92	0
Major Appliances	8798.41	6	62.5	109
Used Oil	554.59	0.8	0	0
Waste Tires	952.69	0	0	0
Household Batteries	23.52	0	0	0
Textiles	264	0	4.55	0
Carpet	17.85	15	0	0
Unspecified/Commingled Recyclables	4121.85	8322.07	298741.01	40
Other (specify)	141.73	51.04	0	0
Other (specify)	710.37	8	0	0
<b>Subtotal</b>	<b>22153.45</b>	<b>8402.91</b>	<b>299105.98</b>	<b>149</b>
<b>TOTAL</b>	<b>221285.23</b>	<b>15932.49</b>	<b>320754.63</b>	<b>20458.76</b>

TOTAL RECYCLING 578431.11

## **APPENDIX B**

**RECYCLING PROGRAM DATA  
BY CITY AND TOWNSHIP  
1991**



1991 CALENDAR YEAR

JANUARY THRU JUNE 1991

JULY THRU DECEMBER 1991

ANOKA COUNTY	Population	House-holds	Recyc. Manda-tory	Type of Service	Pick-Up	City Bin	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991	
							Tons Resid. Recy.	Lbs. Person Recy.	Tons Resid. Recy.	Lbs/ Person Recy.
<u>Under 5,000 Population</u>										
Bethel	416	137	No	--	--	--	17.2	82.7	0	0
Burns Twp.	2,526	795	No	drop-off recycling 3/89	--	--	42.2	33.4	62.8	49.8
Centerville	1,819	581	No	curbside recycling 12/87, curbside yard waste Fall/85	Weekly	Yes	165.1	181.5	50.1	55.1
Circle Pines	4,710	1,569	No	curbside recycling 9/89, curbside yard waste 11/89	Weekly	Yes	275.6	117.0	192.2	81.6
Columbus Twp.	3,739	1,150	No	curbside recycling 3/90	2/month	Yes	96.8	51.8	66.3	35.5
Hilltop	749	411	No	curbside recycling 3/90	Weekly	Yes	14.8	39.4	22	58.8
Lexington	2,289	836	No	curbside recycling 10/88	2/month	Yes	68.0	59.4	39.2	34.2
Linwood Twp.	3,753	1,189	No	curbside recycling 3/91, drop-off recycling 6/88	2/month	Yes	73.1	39.0	93	49.6
St. Francis	2,615	786	No	drop-off recycling 7/88	--	--	266.0	203.4	53.3	40.8
<u>Over 5,000 Population</u>										
Andover	16,047	4,687	No	curbside recycling 11/89, drop-off recycling 6/88	2/month	Yes	1,375.0	171.4	531.1	66.2
Anoka	17,218	6,422	No	curbside recycling 9/88, drop-off recycling 9/88, curbside yard waste 10/88	2/month	Yes	2,209.9	256.7	536.3	62.3
Blaine	39,757	13,131	No	curbside recycling 1/89, curbside yard waste 3/89	Weekly	Yes	2,846.3	143.2	1272.8	64
Columbia Heights	18,861	7,780	No	curbside recycling 4/89, drop-off recycling 7/86, curbside yard waste 8/89	Weekly	Yes	1,652.1	175.2	736.5	78.1
Coon Rapids	54,518	18,135	No	curbside recycling 4/90, drop-off recycling 2/89, curbside yard waste 4/90	Weekly	Yes	3,270.8	120.0	1510.8	55.4
East Bethel	8,233	2,611	No	curbside recycling 5/90, drop-off recycling 1983	Weekly	Yes	312.5	75.9	248.6	60.4
Fridley	28,313	10,950	No	curbside recycling 6/85, drop-off recycling 1979, drop-off yard waste 1985	2/month	Yes	1,641.8	116.0	908.6	64.2
Ham Lake	9,047	2,767	No	curbside recycling 1/91, drop-off recycling 7/88	Weekly	No	363.1	80.3	223.4	49.4
Lino Lakes	9,273	2,777	No	curbside recycling 6/89	Weekly	Yes	377.3	81.4	238.9	51.5
Oak Grove	5,569	1,683	No	curbside recycling 3/91, drop-off recycling 4/88	2/month	Yes	211.2	75.9	175.2	62.9
Ramsey	12,767	3,739	No	curbside recycling 10/90, drop-off recycling 4/87	2/month	Yes	1,016.6	159.3	386.2	60.5
Spring Lake Park	6,458	2,322	No	curbside recycling 1987, curbside yard waste 4/89, drop-off yard waste Fall/90	2/month	Yes	857.9	265.7	266.7	82.6
Miscellaneous (not broken out by community)							2,166.6		9059.4	

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**CALENDAR YEAR 1991**  
**ANOKA COUNTY TOTALS**

TOTAL POPULATION        248,677  
TOTAL HOUSEHOLDS        84,458

	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991		CALENDAR YEAR 1991
	<u>ANOKA COUNTY</u>		<u>ANOKA COUNTY</u>		<u>ANOKA COUNTY</u>
RESIDENTIAL RECYCLING	19,320	155 lbs./person	16,673	134 lbs./person	35,993
DOCUMENTED C/I/I RECYCLING	349		495		844
NON-DOCUMENTED C/I/I RECYCLING	26,722		21,397		48,119
MECHANICAL AND HAND SEPARATED	2,818		2,670		5,488

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JANUARY THRU JUNE 1991    JULY THRU DECEMBER 1991

<u>CARVER COUNTY</u>	<u>Population</u>	<u>House-</u> <u>holds</u>	<u>Recyc.</u> <u>Manda-</u> <u>tory</u>	<u>Type of Service</u>	<u>Pick-Up</u>	<u>City</u> <u>Bin</u>	<u>Tons</u> <u>Resd.</u> <u>Recy.</u>	<u>Lbs.</u> <u>Person</u> <u>Recy.</u>	<u>Tons</u> <u>Resd.</u> <u>Recy.</u>	<u>Lbs.</u> <u>Person</u> <u>Recy.</u>
<u>Under 5,000 Population</u>										
Benton Twp.	903	279	No	drop-off recycling 1970	--	--	0.0	0.0	10.8	23.9
Camden Twp.	920	291	No	drop-off recycling 1984	--	--	0.0	0.0	0	0
Carver	756	268	No	curbside recycling 1/91, drop-off recycling 1/91, drop-off yard waste 1986	--	--	17.8	47.0	26.2	69.3
Chaska Twp.	173	60	No	--	--	--	6.2	71.3	9.1	105.2
Cologne	564	218	No	curbside recycling 1/91, drop-off recycling 8/88, drop-off yard waste 10/88	--	--	43.9	155.8	18.3	65
Dahlgren Twp.	1,312	399	No	--	--	--	1.6	2.5	6	9.2
Hancock Twp.	360	109	No	--	--	--	0.0	0.0	0	0
Hollywood Twp.	1,083	335	No	--	--	--	0.0	0.0	0	0
Laketown Twp.	2,209	613	No	--	--	--	1.6	1.5	2.6	2.3
Mayer	483	170	No	curbside recycling 7/88, drop-off yard waste 10/88	2/month	Yes	24.1	99.6	36.7	152.1
New Germany	358	141	No	curbside recycling 7/88, drop-off yard waste 10/88	2/month	Yes	22.0	123.1	19.7	110
San Francisco Twp.	810	256	No	--	--	--	0.0	0.0	6	14.8
Victoria	2,497	811	No	curbside recycling 6/88, drop-off yard waste 10/82	Weekly	Yes	65.8	52.7	84.7	67.8
Waconia	3,582	1,444	No	curbside recycling 1988, curbside yard waste 10/85, drop-off yard waste 10/83	Weekly	Yes	149.2	83.3	148.1	82.7
Waconia Twp.	1,306	414	No	Drop-off recycling 10/91	--	--	25.5	39.1	0	0
Watertown	2,429	864	No	curbside recycling 1/88, drop-off recycling 1990, drop-off yard waste 10/85	2/month	Yes	111.5	91.8	116.9	96.3
Watertown Twp.	1,374	449	No	--	--	--	20.8	30.2	24.6	35.8
Young America Twp.	917	286	No	--	--	--	26.3	57.3	37.4	81.5
<u>Over 5,000 Population</u>										
Chanhassen	12,339	4,234	No	curbside recycling 4/89, drop-off recycling 6/88, curbside yard waste 10/82, drop-off yard waste 10/82	Bi-weekly	No	491.5	79.7	510.4	82.7
Chaska	11,727	4,355	No	curbside recycling 10/91, drop-off recycling 1980, curbside yard waste, drop-off yard waste 10/82	--	--	755.5	128.9	1088.8	185.7
Norwood/ Young America/ and Hamburg	1,344 1,374 492	514 466 185	No	curbside recycling 5/87, drop-off recycling 1990, drop-off yard waste 10/86	Weekly/ Bi-weekly	Yes	153.0	95.3	215.2	134.1
Miscellaneous (not broken out by community)					--	--	513.3		3036.2	

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1991 CALENDAR YEAR  
 CARVER COUNTY TOTALS

TOTAL POPULATION        49,312  
 TOTAL HOUSEHOLDS        17,161

	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991		CALENDAR YEAR 1991
	<u>CARVER COUNTY</u>		<u>CARVER COUNTY</u>		<u>CARVER COUNTY</u>
RESIDENTIAL RECYCLING	2,430	99 lbs./person	5,398	99 lbs./person	7,827
DOCUMENTED C/I/I RECYCLING	0		203		203
NON-DOCUMENTED C/I/I RECYCLING	5,952		4,093		10,046
MECHANICAL AND HAND SEPARATED	0		0		0

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1991 CALENDAR YEAR

JANUARY THRU JUNE 1991

JULY THRU DECEMBER 1991

<u>DAKOTA COUNTY</u>	<u>Population</u>	<u>House-holds</u>	<u>Recyc. Mandatory</u>	<u>Type of Service</u>	<u>Pick-Up</u>	<u>City Bin</u>	<u>Tons Resd. Recy.</u>	<u>Lbs. Person Recy.</u>	<u>Tons Resd. Recy.</u>	<u>Lbs. Person Recy.</u>
<u>Over 5,000 Population</u>										
Apple Valley	35,879	11,595	No	curbside recycling 4/89, drop-off recyc. pre 7/88, curbside yard waste varies, drop-off yard waste 11/88	Weekly	Yes	2,503.0	139.5	2,083.5	116.1
Burnsville	51,743	19,328	No	curbside recycling 4/89, drop-off recyc. pre 7/88, curbside yard waste varies, drop-off yard waste 4/88	Weekly	Yes	2,610.3	100.9	2,907.4	112.4
Eagan	49,158	18,061	No	curbside recycling 3/89, drop-off recyc. pre 7/88, curbside yard waste varies, drop-off yard waste 4/86	Weekly	Yes	2,986.4	121.5	3,241.2	131.9
Farmington	6,136	2,133	No	curbside recycling 3/89, drop-off recyc. pre 7/88, curbside yard waste 4/89, drop-off yard waste 11/88	Weekly	Yes	594.9	193.9	460.8	150.2
Hastings (Part in Dakota Co.)	15,717	5,517	No	curbside recycling 4/89, drop-off recyc. pre 7/88, curbside yard waste varies, drop-off yard waste 1986	Weekly	Yes	1,052.6	133.9	1,248.6	158.9
Inver Grove Hts.	23,370	8,211	No	curbside recycling 4/89, drop-off recyc. pre 7/88, curbside yard varies, drop-off yard 11/88	Weekly	Yes	909.6	77.8	934.3	80
Lakeville	26,408	8,334	No	curbside recycling 4/89, drop-off recyc. pre 7/88, curbside yard varies, drop-off yard waste 11/88	Weekly	Yes	1,489.3	112.8	1,496.0	113.3
Mendota Heights	9,650	3,393	No	curbside recycling 3/89, drop-off recyc. pre 7/88, curbside yard varies, drop-off yard waste 11/88	Weekly	Yes	632.8	131.2	829.0	171.8
Rosemount	9,129	2,944	No	curbside recycling 2/89, drop-off recyc. pre 7/88, curbside yard waste 3/89, drop-off yard waste 11/88	Weekly	Yes	532.7	116.7	549.2	120.3
South St. Paul	20,264	7,992	No	curbside recycling 4/89, drop-off recyc. pre 7/88, curbside yard varies, drop-off yard waste pre/88	Weekly	Yes	1,505.9	148.6	1,487.6	146.8
West St. Paul	19,144	8,400	No	curbside recycling 4/89, drop-off recyc. pre 7/88, curbside yard varies, drop-off yard waste 11/88	2/month or weekly	Yes	1,484.2	155.1	1,509.2	157.7
Miscellaneous (not broken out by community)							4,684.2		23,294.0	

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1991 CALENDAR YEAR  
DAKOTA COUNTY TOTALS

TOTAL POPULATION           282,633  
TOTAL HOUSEHOLDS           101,051

	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991		CALENDAR YEAR 1991
	DAKOTA COUNTY		DAKOTA COUNTY		DAKOTA COUNTY
RESIDENTIAL RECYCLING	21,451	152 lbs./person	40,511	287 lbs./person	61,962
DOCUMENTED C/I/I RECYCLING	589		585		1,175
NON-DOCUMENTED C/I/I RECYCLING	23,465		25,810		49,275
MECHANICAL AND HAND SEPARATED	0		0		0

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1991 CALENDAR YEAR

JANUARY THRU JUNE 1991

JULY THRU DECEMBER 1991

HENNEPIN COUNTY	Population	House-holds	Recyc. Mandatory	Type of Service	Pick-Up	City Bin	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991	
							Tons Resd. Recy.	Lbs. Pers. Recy.	Tons Resd. Recy.	Lbs. Pers. Recy.
<u>Under 5,000 Population</u>										
Dayton	4,507	1,398	No	curbside recycling 9/89, curbside yard waste	Weekly	No	231.6	102.8	293.4	130.2
Deephaven	3,669	1,334	No	curbside recycling 9/87, curbside yard 1988, drop-off yard waste 1990	Weekly	Yes	188.8	102.9	187.8	102.4
Excelsior	2,378	1,168	Yes	curbside recycling 8/84, curbside yard 1988	Weekly	Yes	176.8	148.7	152.5	128.3
Fort Snelling	97	7	--	--	--	--	0.0	0.0	0.0	0.0
Greenwood	602	246	No	curbside recycling 10/87, curbside yard 1989, drop-off yard waste 1990	Weekly	Yes	33.5	111.3	26.0	86.4
Hanover	302	93	No	--	--	--	11.5	76.2	12.1	80.1
Hassan Twp.	2,027	609	No	curbside recycling 5/89, curbside yard 1989	Weekly	Yes	89.3	88.1	88.8	87.6
Minnetonka Beach	571	204	No	curbside recycling 11/88, curbside yard waste 6/88	2/month	Yes	57.3	200.7	139.5	488.6
Minnetrissa	3,501	1,221	No	curbside recycling 5/87, drop-off yard 1988	2/month	Yes	454.1	259.4	872.9	498.7
Osseo	2,652	974	No	curbside recycling 5/89, curbside yard waste 5/89	Weekly	Yes	159.5	120.3	159.5	120.3
Rockford	438	162	No	curbside recycling 8/88, drop-off recycling 8/89, curbside yard 1989	Bi-weekly	Yes	17.3	79.0	12.4	56.6
Rogers	707	263	No	curbside recycling 8/89, curbside yard 1989	Bi-weekly	--	56.7	160.4	41.2	116.5
St. Bonifacius	1,191	402	No	curbside recycling 9/87, curbside yard 1989, drop-off yard 1988	Weekly	Yes	70.0	117.5	79.7	133.8
Spring Park	1,524	719	No	curbside recycling 4/87, drop-off recycling 4/87, curbside yard 1988	Alt.Fri.	Yes	50.7	66.5	25.1	32.9
Tonka Bay	1,472	580	No	curbside recycling 6/87, drop-off recycling 7/87, curbside yard waste 10/88, drop-off yard 1989	2/year	Yes	143.7	195.2	162.1	220.2
Wayzata	3,820	1,733	No	curbside recycling 7/87, drop-off recycling 1967, curbside yard 1986, drop-off yard 1986	Weekly	Yes	476.7	249.6	417.1	218.4
Woodland	495	176	No	curbside recycling 10/87, drop-off recycling 10/87, curbside yard 1989	2/month	Yes	24.6	99.4	35.5	143.4

1991 CALENDAR YEAR

JANUARY THRU JUNE 1991

JULY THRU DECEMBER 1991

HENNEPIN COUNTY	Population	House-holds	Recyc. Mandatory	Type of Service	Pick-Up	City Bin	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991	
							Tons Resd. Recy.	Lbs. Pers. Recy.	Tons Resd. Recy.	Lbs. Pers. Recy.
<u>Over 5,000 Population</u>										
Bloomington	86,453	34,664	Yes	curbside recycling 4/89, drop-off recycling 1/87, curbside yard waste 4/89, drop-off yard waste 4/90	Weekly	Yes	5,973.2	138.2	7,983.5	184.7
Brooklyn Park	57,359	20,825	No	curbside recycling 6/89, drop-off recycling 1/89, curbside yard 1989, drop-off yard waste 4/90	Weekly	Yes	2,173.0	75.8	4,772.0	166.4
Champlin	17,771	5,766	No	curbside recycling 8/88, curbside yard 1988	Weekly	Yes	969.2	109.1	1,454.5	163.7
Corcoran	5,300	1,578	No	curbside recycling 8/88, drop-off recycling 8/88	Alt.Tues.	Yes	256.2	96.7	179.6	67.8
Eden Prairie	40,091	14,725	No	curbside recyc. by 8/89, drop-off recycling 1/89, curbside yard waste 10/89	Weekly	Yes	1,801.3	89.9	1,791.9	89.4
Edina	46,079	19,963	Yes	curbside recycling 1987, drop-off recycling 1987, curbside yard 1989	Fall Weekly	Yes	3,961.6	171.9	5,259.4	228.3
Golden Valley	20,889	8,266	No	curbside recycling 8/88, curbside yard 1988	Season Weekly	Yes	3,990.2	382.0	1,738.2	166.4
Hopkins	16,391	7,932	No	curbside recycling 1/89, drop-off recycling 1/89, curbside yard 1988	Season Weekly	Yes	617.8	75.4	1,152.2	140.6
Maple Grove	39,980	12,993	No	curbside recycling 5/89, drop-off recycling 5/89, curbside yard 1989	Season Weekly	Yes	6,690.8	334.7	3,045.0	152.3
Minneapolis	368,993	161,268	No	curbside recycling 11/83, curbside yard waste 10/87	Fall 2/month Season	Yes	19,564.5	106.0	21,158.5	114.7
Mnetonka	48,658	18,931	No	curbside recycling 5/89, drop-off recycling 2/88, curbside yard 1988, drop-off yard 1988	Weekly Season	Yes	2,529.7	104.0	2,607.4	107.2
Mound	9,586	3,697	No	curbside recycling 10/85, drop-off recycling 10/85, curbside yard 1989, drop-off yard 1988	Weekly Fall	Yes	552.7	115.3	909.3	189.7
Richfield	35,544	15,529	No	curbside recycling 9/84, curbside yard 1988	Weekly Season	Yes	2,304.8	129.7	2,779.4	156.4
Robbinsdale	14,406	6,045	Yes	curbside recycling 6/88, drop-off recycling 6/88, curbside yard 1988	Weekly Season	Yes	798.7	110.9	967.2	134.3

1991 CALENDAR YEAR

JANUARY THRU JUNE 1991

JULY THRU DECEMBER 1991

<u>HENNEPIN COUNTY</u>	<u>Population</u>	<u>House-holds</u>	<u>Recyc. Mandatory</u>	<u>Type of Service</u>	<u>Pick-Up</u>	<u>City Bin</u>	<u>Tons Resd. Recy.</u>	<u>Lbs. Pers. Recy.</u>	<u>Tons Resd. Recy.</u>	<u>Lbs. Pers. Recy.</u>
St. Anthony	5,296	2,228	No	curbside recycling 12/89, drop-off recycling 1986, curbside yard waste 12/89	Weekly	Yes	167.2	63.1	238.9	90.2
St. Louis Park	43,781	19,942	No	curbside recycling 1/82, curbside yard 1986	Season Weekly	Yes	3,327.6	152.0	3,747.5	171.2
Shorewood	6,135	2,107	No	curbside recycling 7/87, drop-off recycling 7/87, curbside yard waste 6/90	Bi-weekly	Yes	280.5	91.4	432.2	140.9
Henn. Recyc. Group:			No	curbside recycling 6/89, drop-off recycling 1/89, curbside yard 1989,	Spring Weekly	Yes	5,562.9	149.9	6,013.4	162.0
Brooklyn Center	28,741	11,217		drop-off yard waste 5/90	Weekly					
Crystal	23,771	9,297		curbside recycling 4/86, drop-off recycling 4/86, curbside yard 1988, drop-off yard 1990	Weekly		2,235.1	84.5	3,504.3	132.5
New Hope	21,715	8,473		curbside recycling 8/88, drop-off recycling 11/86, curbside yard 4/87	Weekly	Yes				
Plymouth/	52,492	19,012	No		Weekly	Yes				
Medicine Lake	386	170			Season					
W. Henn. Recycling:			No		Bi-weekly	Yes	1,132.0	117.1	1,069.2	110.6
Greenfield	1,476	466			Season					
Independence	2,878	947								
Long Lake	1,985	751								
Loretto	419	173								
Maple Plain	2,049	719								
Medina	3,219	1,047								
Orono	7,303	2,629								
Miscellaneous (not broken out by community)							25,288.0		37,020.0	

1991 CALENDAR YEAR

HENNEPIN COUNTY TOTALS

TOTAL POPULATION 1,039,099  
TOTAL HOUSEHOLDS 422,649

	<u>JANUARY THRU JUNE 1991</u>		<u>JULY THRU DECEMBER 1991</u>		<u>CALENDAR YEAR 1991</u>
	<u>HENNEPIN COUNTY</u>		<u>HENNEPIN COUNTY</u>		<u>HENNEPIN COUNTY</u>
RESIDENTIAL RECYCLING	92,419	178 lbs./person	110,529	213 lbs./person	202,948
DOCUMENTED C/I/I RECYCLING*	1,867		9,262		11,130
NON-DOCUMENTED C/I/I RECYCLING	188,156		190,071		378,227
MECHANICAL HAND SEPARATED	13,909		11,224		25,133

\*Some municipal office tonnages are included in residential recycling.

1991 CALENDAR YEAR

JANUARY THRU JUNE 1991

JULY THRU DECEMBER 1991

RAMSEY COUNTY	Population	House-holds	Recyc. Mandatory	Type of Service	Pick-Up	City Bin	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991	
							Tons Resd. Recy.	Lbs. Pers. Recy.	Tons Resd. Recy.	Lbs. Pers. Recy.
<u>Under 5,000 Population</u>										
Gem Lake	440	141	No	curbside recycling 9/88	2/month	\$ 8	6.4	29.1	12.2	55.3
Lauderdale	2,698	1,169	No	curbside recycling 7/87	2/month	No	81.3	60.3	67.9	50.3
North Oaks	3,456	1,112	No	curbside recycling 4/87	Monthly	\$ 8	137.7	79.7	133.5	77.3
St. Anthony	2,506	1,283	No	curbside recycling 1/90, drop-off recycling 1979	Weekly	Yes	73.3	58.5	108.4	86.5
Spring Lake Park (Part in Ramsey Co.)	103	41	--	--	--	--	0.0	0.0	0.0	0.0
<u>Over 5,000 Population</u>										
Arden Hills	9,496	2,903	No	curbside recycling 3/88	Weekly	Yes	305.0	64.2	328.4	69.2
Falcon Heights	5,376	2,025	No	curbside recycling 4/87, curbside yard 1990	2/month	\$ 8	196.9	73.3	201.2	74.8
Little Canada	9,028	3,934	No	curbside recycling 7/87	Weekly	Yes	227.6	50.4	351.1	77.8
Maplewood	31,365	11,671	No	curbside recycling 11/88	2/month	Yes	537.8	34.3	865.8	55.2
Mounds View	12,590	4,746	No	curbside recycling 6/88	2/month	Yes	251.8	40.0	260.0	41.3
New Brighton	22,253	8,575	No	curbside recycling 7/87	2/month	Yes	577.0	51.9	635.2	57.1
North St. Paul	12,607	4,574	No	curbside recycling 7/87	2/month	Yes	331.6	52.6	352.3	55.9
Roseville	33,493	13,588	No	curbside recycling 7/87	2/month	No	1,036.9	61.9	1,224.7	73.1
St. Paul	272,537	110,424	No	curbside recycling 1981	2/month	No	6,820.1	50.0	8,071.5	59.2
Shoreview	24,912	9,178	No	curbside recycling 5/88	Weekly in Yes	Dist 14 & 14	919.8	73.8	1,012.8	81.3
Vadnais Heights	11,267	4,014	No	curbside recycling 10/88	2/month	\$ 6	274.3	48.7	356.1	63.2
White Bear Lake (Part in Ramsey Co.)	24,450	9,007	No	curbside recycling 4/88, curbside yard waste 7/88	Weekly	Yes	643.2	52.6	732.1	59.9
White Bear Twp.	9,786	3,339	No	curbside recycling 9/85, curbside yard waste 4/88	Weekly	Yes	248.7	50.8	271.9	55.6
Miscellaneous (not broken out by community)							26,684.1		30,153.9	

RAMSEY COUNTY TOTALS

TOTAL POPULATION	485,225
TOTAL HOUSEHOLDS	190,414

	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991		CALENDAR YEAR 1991
	RAMSEY COUNTY		RAMSEY COUNTY		RAMSEY COUNTY
RESIDENTIAL RECYCLING	39,354	162 lbs./person	45,139	186 lbs./person	84,492
DOCUMENTED C/I/I RECYCLING**	1,124		1,184		2,308
NON-DOCUMENTED C/I/I RECYCLING	51,829		57,012		108,841
MECHANICAL AND HAND SEPARATED	1,593		1,503		3,096

\*Some institutional tonnages are included in residential recycling.

1991 CALENDAR YEAR

JANUARY THRU JUNE 1991

JULY THRU DECEMBER 1991

SCOTT COUNTY	Population	House-holds	Recyc. Mandatory	Type of Service	Pick-Up	City Bin	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991	
							Tons Resd. Recy.	Lbs. Pers. Recy.	Tons Resd. Recy.	Lbs. Pers. Recy.
<u>Under 5,000 Population</u>										
Belle Plaine	3,166	1,103	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Belle Plaine Twp.	697	213	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Blakeley Twp.	458	141	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Cedar Lake Twp.	1,740	543	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Credit River Twp.	2,956	898	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Elko	227	76	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Helena Twp.	1,128	359	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Jackson Twp.	1,400	474	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Jordan	2,958	1,062	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Louisville Twp.	919	282	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
New Market	224	80	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
New Market Twp.	2,075	649	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
New Prague	2,402	889	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
St. Lawrence Twp.	436	127	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Sand Creek Twp.	1,536	421	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Spring Lake Twp.	2,916	923	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
<u>Over 5,000 Population</u>										
Prior Lake	11,730	3,999	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Savage	10,851	3,571	No	curbside recycling 1/89	--	--	N/A	N/A	N/A	N/A
Shakopee	11,966	4,270	No	curbside recycling 1/89, curbside yard waste 4/89	--	--	N/A	N/A	N/A	N/A
Scott County Total				curbside recycling 1/89, curbside yard waste 4/89	Varies	Yes	2,040.8		8,226.5	

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SCOTT COUNTY TOTALS

TOTAL POPULATION 59,785  
 TOTAL HOUSEHOLDS 20,080

	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991		CALENDAR YEAR 1991
	SCOTT COUNTY		SCOTT COUNTY		SCOTT COUNTY
RESIDENTIAL RECYCLING	2,041	68 lbs./person	8,227	275 lbs./person	10,267
DOCUMENTED C/I/I RECYCLING	12		103		115
NON-DOCUMENTED C/I/I RECYCLING	8,914		11,105		20,019
MECHANICAL AND HAND SEPARATED	0		0		0

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1991 CALENDAR YEAR

JANUARY THRU JUNE 1991

JULY THRU DECEMBER 1991

WASHINGTON COUNTY	Population	House-holds	Recyc. Mandatory	Type of Service	Pick-Up	City Bin	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991	
							Tons Resd. Recy.	Lbs. Pers. Recy.	Tons Resd. Recy.	Lbs. Pers. Recy.
<u>Under 5,000 Population</u>										
Afton	2,683	905	No	curbside recycling 9/88, curbside yard waste 4/90	2/month	No	89.6	66.8	96.4	71.9
Bayport	3,132	725	No	curbside recycling 10/89, drop-off recycling 1987, curbside yard waste 10/89	2/month	Yes	99.0	63.2	119.1	76.0
Baytown Twp.	984	317	No	curbside recycling 10/88	Monthly	No	23.9	48.6	30.9	62.7
Birchwood	1,035	362	No	curbside recycling 2/89, curbside yard waste 9/89	2/month	Yes	62.2	120.2	46.5	89.9
Dellwood	885	302	No	curbside recycling 1/89, curbside yard waste 9/89	2/month	Yes	56.5	127.7	41.5	93.7
Denmark Twp.	1,200	377	No	curbside recycling 9/89	Monthly	No	16.8	28.0	18.7	31.1
Grant Twp.	3,849	1,198	No	curbside recycling 1/90	Monthly	No	85.3	44.3	82.3	42.7
Grey Cloud Island	411	164	No	curbside recycling 6/90	Monthly	Yes	4.1	20.0	5.5	26.7
Hastings	5	2	--	--	--	--	0.0	0.0	0.0	0.0
(Part in Washington Co.)										
Hugo	4,621	1,494	No	drop-off yard waste 10/88	--	--	150.3	65.1	72.8	31.5
Lake St. Crx. Bch.	1,086	420	No	curbside recycling 7/88, curbside yard waste 1987	2/month	Yes	45.7	84.2	35.2	64.8
Lakeland	1,997	645	No	curbside recycling 5/88, curbside yard waste 1987	2/month	Yes	59.0	59.1	69.5	69.6
Lakeland Shores	293	102	No	curbside recycling 4/90, curbside yard waste 1987	2/month	Yes	4.7	32.1	5.3	35.8
Landfall	667	292	No	curbside recycling 4/90	2/month	Yes	8.5	25.5	6.1	18.2
Marine St. Croix	602	235	No	curbside recycling 4/90, drop-off recycling 1985, drop-off yard waste 4/90	Monthly	No	74.4	247.2	100.3	333.2
May Twp.	2,570	835	No	curbside recycling 4/90, drop-off recycling 1985	Monthly	No	100.0	77.8	134.5	104.7
New Scandia Twp.	3,258	1,084	No	curbside recycling 4/90, drop-off recycling 1985	Monthly	No	119.6	73.4	124.5	76.4
Newport	3,728	1,331	No	curbside recycling 4/90, drop-off recycling 1987, drop-off yard waste 4/90	4/month	Yes	80.1	43.0	159.7	85.7
Oak Park Heights	3,583	1,365	No	curbside recycling 9/89, drop-off recycling 1987, curbside yard waste 6/88	4/month	Yes	97.9	54.6	198.1	110.6
Pine Springs	434	135	No	curbside recycling 9/89	Monthly	No	10.5	48.4	11.0	50.5
St. Mary's Point	338	126	No	curbside recycling 10/88, curbside yard waste 1987	2/month	No	10.4	61.5	11.5	68.2
St. Paul Park	4,995	1,759	No	curbside recycling 2/90, drop-off recycling 1987, drop-off yard waste 10/90	4/month	Yes	372.5	149.1	303.1	121.4

1991 CALENDAR YEAR

WASHINGTON COUNTY	Population	House-holds	Recyc. Manda-tory	Type of Service	Pick-Up	City Bin	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991	
							Tons Resd. Recy.	Lbs. Pers. Recy.	Tons Resd. Recy.	Lbs. Pers. Recy.
Stillwater Twp.	2,151	668	No	curbside recycling 3/89	2/month	Yes	62.5	58.1	79.5	73.9
West Lakeland Twp.	1,913	578	No	curbside recycling 10/88	2/month	No	40.0	41.8	56.6	59.2
White Bear Lake (Part in Washington Co.)	415	168	No	curbside recycling 6/88	4/month	Yes	11.8	56.9	13.6	65.3
Willernie	584	228	No	curbside recycling 2/89	2/month	Yes	17.7	60.6	18.3	62.6
<u>Over 5,000 Population</u>										
Cottage Grove	23,715	7,118	No	curbside recycling 10/90, drop-off recycling 1987, drop-off yard waste 1985	4/month	Yes	1,956.0	165.0	1,213.6	102.4
Forest Lake	6,007	2,366	No	curbside recycling 7/89, drop-off yard waste 1984	2/month	Yes	664.8	221.3	727.2	242.1
Forest Lake Twp.	6,847	2,193	No	curbside recycling 7/89	2/month	Yes	195.5	57.1	310.7	90.7
Lake Elmo	5,900	1,976	No	curbside recycling 3/88, curbside yard waste 4/90, drop-off yard waste 1985	-- 4/month	Yes	1,083.1	367.2	525.2	178.0
Mahtomedi	5,679	1,916	No	curbside recycling 2/89	2/month	Yes	174.3	61.4	167.6	59.0
Oakdale	19,735	7,271	No	curbside recycling 11/89, drop-off recycling 1987, curbside yard waste 4/90	2/month 4/month	Yes	640.9	65.0	734.7	74.5
Stillwater	13,970	5,030	No	curbside recycling 9/89, drop-off recycling 1987, curbside yard waste 6/88	4/month 4/month	Yes	1,356.7	194.2	1,188.0	170.1
Woodbury	21,392	7,397	No	curbside recycling 1/90, curbside yard waste 4/89, drop-off yard waste 1984	4/month 4/month	Yes	1,712.7	160.1	1,246.3	116.5
Miscellaneous (not broken out by community)							1016.13		5,117.7	

WASHINGTON COUNTY TOTALS

TOTAL POPULATION 150,664  
 TOTAL HOUSEHOLDS 51,084

	JANUARY THRU JUNE 1991		JULY THRU DECEMBER 1991		CALENDAR YEAR 1991
	WASHINGTON COUNTY		WASHINGTON COUNTY		WASHINGTON COUNTY
RESIDENTIAL RECYCLING	10,503.1	139 lbs./person	13,071.1	173.5132 lbs./person	23574.2
DOCUMENTED C/I/I RECYCLING*	85.6		326.8		412.39
NON-DOCUMENTED C/I/I RECYCLING	9,678.0		9,678.0		19356
MECHANICAL AND HAND SEPARATED	537.0		464.2		1001.16

1991 CALENDAR YEAR  
 TOTALS FOR METRO AREA

TOTAL POPULATION 2,318,533  
 TOTAL HOUSEHOLDS 888,207

	JANUARY THRU JUNE 1991 <u>METRO AREA</u>	JULY THRU DECEMBER 1991 <u>METRO AREA</u>	CALENDAR YEAR 1991 <u>METRO AREA</u>
RESIDENTIAL RECYCLING*	187,516 162 lbs./person	239,548 207 lbs./person	427,065
DOCUMENTED C/I/I RECYCLING*	4,027	12,159	16,187
NON-DOCUMENTED C/I/I RECYCLING	314,716	319,167	633,882
MECHANICAL AND HAND SEPARATED	18,857	15,861	34,718

\*Some municipal office tonnages are included in residential recycling.

Source: Metropolitan Council "April 1, 1991 Population and Household Estimate: For Cities and Counties in the Twin Cities Metropolitan Area," Publication No. 620-92-052, and County Recycling Implementation Progress Reports August 1991, & March 1992, updated August 1992.

