

**IMPACT OF THE MANITOBA PRODUCT STEWARDSHIP
PROGRAM ON RESIDENTIAL SOLID WASTE RECYCLING IN
FOUR MUNICIPALITIES OF THE SOUTH-CENTRAL
RECYCLING REGION OF MANITOBA
(1992 - 2000)**

By

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**A Thesis Submitted to the Faculty of Graduate Studies
In Partial Fulfillment of the Requirements for the Degree of**

Master of Natural Resources Management

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**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of
Manitoba in partial fulfillment of the requirement of the degree
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MASTER OF NATURAL RESOURCES MANAGEMENT**

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ABSTRACT

Under the Manitoba Round Table's Strategy for Solid Waste Minimization and Management, a central obligation of the provincial government is to effectively reinforce waste minimization activities, such as recycling, and to ensure equitable opportunities and access to programs for program participants. Recycling is a system that includes a circuit of collection, processing, manufacture and consumption that diverts raw materials from the residential waste stream to industries for the manufacturing of new raw materials and products. Such activities provide benefits to both urban centres and rural municipalities in Manitoba and conserve resources.

The Province of Manitoba, in proclaiming its Waste Reduction and Prevention (WRAP) Act in August 1990, enabled the Province to assign responsibilities for the stewardship of products and materials that have the potential to become waste. Under this Act, the government of Manitoba established the Manitoba Product Stewardship Corporation (MPSC) in January 1995 to provide financial support for household recycling services in all communities of the province. The establishment of this program was intended to encourage efficient collection, processing, and marketing of recyclable commodities generated in the province.

The purpose of this study is to evaluate the impact of Manitoba Product Stewardship Program (MPSP) on Residential Solid Waste Recycling in four Municipalities of the South-central Recycling Region of Manitoba since the inception of MPSP in 1995. The

study results show that some recycling programs existed and were well established before the inception of MPSP, and that MPSP has the highest positive impact on a program such as that of Portage la Prairie that was established after the inception of MPSP. The Town of Winkler, the R.M. of Grey and the R.M. of Roland, where programs were already well established before MPSP, saw moderate positive net changes.

Some noticeable improvements were observed in recycling promotion and education, as well as in the infrastructure of the four communities. Even though MPSP did not directly pay for the infrastructure, its support payment motivated more collection and hence the need for and support of the infrastructure. MPSP support payments are the major positive net change in all sampled communities. The support payment is a steady source of revenue that helps communities with existing programs keep their programs in place and remove recycling costs from their municipal budgets. The most significant net change and benefit occurred in the City of Portage la Prairie where a recycling program did not exist before the inception of MPSP.

ACKNOWLEDGEMENT

I wish to acknowledge and thank the following people for their support and encouragement, without which this study would not have been possible:

- The Almighty God for giving me the strength, courage and wisdom to manage my full time job, family responsibilities, noisy confusions of life and to complete this program of study.
- My family for standing by me during many difficult times and gloomy days..
- Dr. John Sinclair, my academic advisor, for his time and guidance through the "Very Long, Rough and Winding Road".
- The rest of my academic committee members: Professor Thomas Henley, for his time and being OPTIMISTIC that I would make it to the end of that "Very Long, Rough and Winding Road"; Mr. Jim Fogg, MPSC and Professor Peter Miller, University of Winnipeg for all their countless help.
- Mike Fernandes and his MPSC staff for their help in data collection.
- All my case study communities' staff who provided me with recycling data.
- Mr. Dennis DePape and Dr. Dave Jenkinson for editing.

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- Jake Heide - Gateway Resources (formerly called Valley Rehab Centre) Winkler
- Peter Reimer - R.M. of Grey
- Sherry Peirson - R.M. of Roland.

Definitions and Abbreviations

- 1) Packaging - (beverage single): Including shopping bags, protective and promotional wraps, containers, pallets, plastic sheeting, with the largest component being paper products.
- 2) Non-durables: Include newspapers, books, magazines, office and commercial tissue papers, clothing, footwear, disposables (razors, pens, etc.)
- 3) Yard waste: Including grass clippings, leaves, and similar materials.
- 4) Durables: Include appliances, furniture, rubber tires, and other manufactured products
- 5) Food Wastes: Include vegetable matters, peels, rinds, coffee grinds, tea bags, etc.
- 6) Miscellaneous: Other products not fitting any of the above five categories.
- 7) CCME - Canadian Council of Ministers of the Environment
- 8) CIPSI - Canadian Industry Packaging Stewardship Initiative
- 9) ICI - Industrial, Commercial and Institutional
- 10) MPSC - Manitoba Product Stewardship Corporation
- 11) MPSP - Manitoba Product Stewardship Program
- 12) MSW - Municipal Solid Waste
- 13) NAPP - National Packaging Protocol
- 14) WCED - World Commission on Environment and Development
- 15) STAR - Student Action on Recycling
- 16) WRAP - Waste Reduction and Prevention

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CHAPTER I

INTRODUCTION

1.0 Background:

With modern science and technology, it has become easier to manufacture and produce new products, and, as a consequence worldwide, more by-products are being generated from the products' packaging. More by-products come from the packaging that is needed for the shipment of products, as well as for the preventing of their spoilage or contamination. In turn, this increase in by-products creates more concern about the use of natural resources in the absence of waste reduction and prevention policies and programs. Canada's ability to generate wastes gradually increased to the point where, in 1989, Canadians produced more garbage per person than any other nation on earth, setting a world record of 1.7 kilograms per person per day. With 1.6 kilograms per person per day, Australia and the United States tied for second place,.

The post-war era saw Manitoba evolve into a consumer, throw-away society that generated more than 1,000,000 tonnes of garbage every year (Manitoba Environment 1991). This amount translates into approximately 1,000 kg per person per year, or 2.7 kg per person per day. This condition is not in concert with the Province of Manitoba's and the World Commission on Environment and Development's (WCED) initiatives for resource conservation and sustainable development. Following the adoption of WCED Sustainable Development (SD) policy, 1994 measurements showed that the amount of waste generated per person in Manitoba had decreased from 1000kg to approximately 790

kg per person per year (Manitoba Environment 1997). Even though this decrease suggests that progress had been made, additional information is required to evaluate properly the effectiveness of waste reduction efforts in Manitoba. Furthermore, there needs to be more effort made in order to achieve further success in waste reduction.

Sustainable development can be seen as a way to pursue development and job creation in an environmentally friendly manner. This concept will require effective use of all our natural, human and financial resources through processes such as:

- Reducing, reusing, recycling and recovering the products of production and consumption
- Promoting environmentally sound, value-added processing and manufacturing
- Enhancing productivity and competitiveness through technological, scientific, institutional, political and social innovations
- Replenishing and reclaiming damaged environments
- Increasing the productive capabilities and qualities of natural resources
- Conserving and developing substitutes for scarce resources

WCED increased the awareness of resource conservation and waste management through its definition of, and guidelines for, sustainable development. Recycling is one of the major tools for facilitating worldwide resource conservation and waste management and a means for helping to achieve the WCED goals. As a local response, through the Waste Reduction and Prevention (WRAP) Act, the Province of Manitoba instituted waste

management activities that have been centered on three goals targeting resource conservation and sustainable development (SD) in the province. These goals include:

1. Reducing the volume of waste generated and landfill
2. Separating hazardous from non-hazardous waste and
3. Improving the status of waste disposal facilities in the province.

(Manitoba Environment 1997).

Under the WRAP Act, and in order to increase the volume of waste diverted from landfills, the Province of Manitoba created the Manitoba Product Stewardship Program (MPSP) in 1995 to:

1. maximize the Reduction, Reuse and Recycling (3R) of designated products and materials
2. hold distributors of products and materials with the potential to become waste in Manitoba responsible for a share of the costs of managing those wastes
3. provide stable, long term funding to support municipal recycling programs throughout Manitoba.

1.1 Purpose

The purpose of this study was to investigate the impact of the Manitoba Product Stewardship Program on residential solid waste recycling in four municipalities of the South-central Recycling Region of Manitoba (SCRRM) between the period of 1992 and 2000. The study does not include Industrial, Commercial or Institutional waste.

1.2 Objectives

To accomplish the above purpose, the main objectives of this study were:

- To identify past and present recycling activities and waste generation rates in the South-central Recycling Region of Manitoba (SCRRM).
- To evaluate the net change in recycling in SCRRM.
- To investigate the impact of current recycling programs in meeting resource conservation goals.
- To identify barriers to and opportunities for improving South-central residential recycling activities
- To recommend options for improving the current programs if necessary.

1.3 Area Selection

Although recycling in Manitoba is a province-wide initiative, this study focused on the municipalities of the South-central Recycling Region of the province. As illustrated in figure 1, the South-central Recycling Region of Manitoba, which occupies approximately one tenth of Manitoba's land area, is bordered on the east by Winnipeg and the Eastern-Interlake Regions; on the west by the Park-West Region; on the north by both the Eastern-Interlake and Park-West Regions; and on the north by the state of North Dakota. Largely rural in composition, the SCRR has an approximate population of 60,711 people who, as shown in Table 1, live in the area's 17 municipalities, 3 towns and 1 city.

Table 1: Registered Communities and Population Distribution of Study Region.

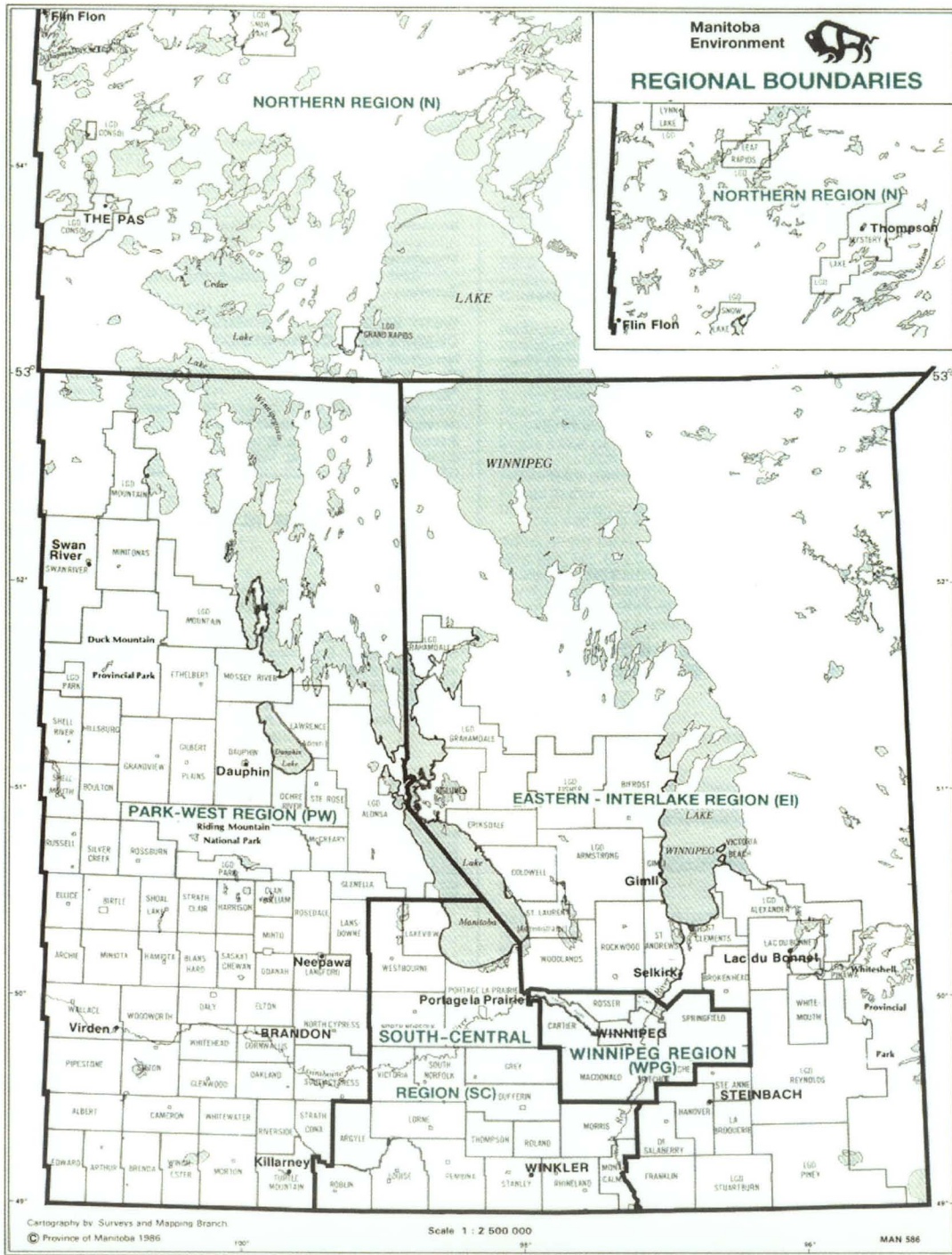
<u>Community names</u>	<u>Population</u>	<u>Community names</u>	<u>Population</u>
Argyle, R.M.	1307	Portage La Prairie, R.M.	7156
Carman/Dufferin, R.M.	2403	Rhineland, R.M.	4150
Grey, R.M.	2104	Roblin, R.M.	954
Lakeview, R.M.	460	Roblin, Town	1838
Lorne, R.M.	2128	Roland, R.M.	968
Louise, R.M.	1147	South Norfolk, R.M.	1234
Moncalm, R.M.	1606	Stanley, R.M.	4558
Morris, Town	1616	Thompson, R.M.	1262
North Norfolk, R.M.	2967	Victoria, R.M.	1405
Pembina, R.M.	1928	Winkler, Town	6397
Portage la Prairie City	13186		

(MPSC 1999)

The South-Central Recycling Region of the Province was selected for study for the following reasons:

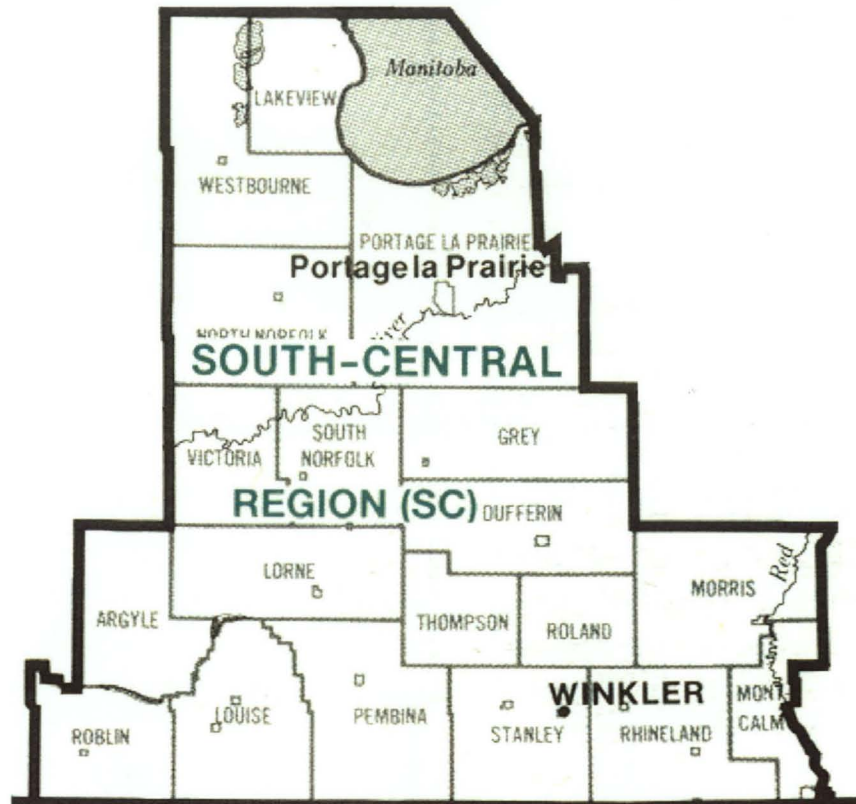
- A large number of recycling programs already existed in this region before the inception of MPSP
- It was expected that data from existing and new programs would be available
- It was expected that the proximity of the region to the student would make consultation with residents and program coordinators more feasible.

Fig. 1: Map of Recycling Regions of Manitoba



Manitoba Environment – Recycling Directory

Fig. 2 South-central Recycling Region of Manitoba (the study region)



Scale 1 : 2 500 000

Manitoba Environment – Recycling Directory

1.4 Methods

The specific objectives, as set forth on page 4, were achieved through the following principal tasks: a review of relevant literature; a consultative process; the collecting and comparing of data on the types and quantities of materials recycled, as well as the participation rates pre- and post-MPSP; and the conducting of case studies.

1.4.1 Review of Relevant Literature

A review of relevant literature was necessary in order to gain a broad understanding of the essentials of recycling and stewardship, and to ascertain the local data on waste management and recycling. Broad understanding of these issues was necessary in order to evaluate current programs and policy and decision making processes on waste management issues, as well as to evaluate the distribution methods of available funds and other resources. Sources of funds for municipal recycling programs, as well as the benefits of recycling, focusing on resource conservation, pollution control and sustainable development, were reviewed.

1.4.2 Consultative Process

In addition to the literature review, community recycling-coordinators in the SCRR and MPSP personnel were consulted in order to gain firsthand information on both the region and the program. Since the MPSP is still in its early years, a literature review was not sufficient to access relevant information necessary to do the net change analysis. For this reason, it became imperative to consult with various people involved in recycling activities, in the study region, in order to obtain program details on:

- quantities of recycled materials before and after the inception of the Manitoba Product Stewardship Program
- types of materials collected before and after the inception of the Manitoba Product Stewardship Program

- educational materials on recycling pre- and post-inception of the Manitoba Product Stewardship Program
- collection infrastructure pre- and post-inception of the Manitoba Product Stewardship program and
- the strengths and weaknesses of recycling in the Rural Municipalities of the South-central Recycling Region (SCRR) of Manitoba.

Consultative process involved an initial telephone request for data on the above items from MPSP and registered communities of the study region. Following the telephone request, meetings with recycling program personnel, including Coordinators and Managers, were held in the City of Portage la Prairie, the Town of Winkler, the R.M. of Grey and the R.M. of Roland. As well, trips to the collection-sites of these four communities were made in order to gain some knowledge on the collecting process and participation rate. These communities were selected because of their varying population sizes, and anticipated active recycling programs.

1.4.3 Case Study

A more detailed case study was carried out in order to get a clearer idea of coordinators' perceptions of their recycling programs, as well as to identify, further, the strengths and weaknesses of rural programs. It was necessary to meet personally with some stakeholders who are impacted by or have concerns with rural recycling programs. The Town of Winkler, the City of Portage la Prairie, the R.M. of Grey and the R.M. of Roland

were my case study communities because of the available pre- and post-MPSP recycling activities and data.

1.6 Organization of the Final Report

The practicum is organized into five chapters. The introduction, chapter 1, is followed by chapter 2, which provides a review of relevant literature. In chapter 3, the local recycling situation in the South-central Recycling Region is described. The presentation of results and data analysis is outlined in chapter 4, and conclusions and recommendations follow in chapter 5.

CHAPTER 2

RECYCLING and STEWARDSHIP

2.0 Introduction

Not until recent years did the issue of waste management become one of the most important issues in smaller communities of developed countries, as well as in most areas of the developing regions of the world. Henstock (1984) defines waste as "that which is cheaper to throw away than to utilize." He cautions that his statement does not mean that waste is intrinsically valueless, as some of it would have value if it were in some other location. Alternatively, waste can come from residual materials of any industrial manufactured product. Thus, waste can be defined as a non-product residual with zero value in the current market, a term that will take into account the location of the waste. Waste must be defined with caution because one person's waste may be another person's treasure. The decision to call something waste is, therefore, dependent upon social and economic classes and values.

The purpose of this chapter is to provide a review of literature regarding waste management, recycling and stewardship activities in Manitoba. It is organized into the following four sections.

1. Waste Management Overview
2. Benefits of recycling
3. Essentials of recycling
4. Relationship between Recycling and Stewardship.

This review of recycling related literature focuses on the recycling activities and stewardship programs in the Rural Municipalities of the South Central Region of Manitoba (RMSCRM) prior to the inception of Manitoba Product Stewardship Corporation. Constraints, opportunities, impacts on environment, the economy and social well being of the communities, in relation to sustainable development (SD), are discussed. The process of monitoring and evaluating recycling in RMSCRM prior to the inception of Manitoba Product Stewardship Corporation is discussed as well.

2.1 Waste Management Overview

The waste management industry provides a number of environmental services to Canadians. Waste management includes the collection and transportation of waste and materials intended for recycling or reuse, the operation of transfer stations, and the treatment and disposal of hazardous waste. The waste management industry is one of the largest environment industries, and its importance to all levels of government can be measured by the size of its component in government budgets across Canada.

According to Statistics Canada (2000), of the various waste management activities undertaken by local governments, collection and transportation accounted for the largest part of expenditures of \$1,148.2 and \$1,103.9 million in 1994 and 1996 respectively. The decline between 1994 and 1996 is attributable to governments' cutting back on their operating costs, as well as consolidating facilities and improving efficiency.

Statistics Canada released some data from two of its 1998 waste management industry surveys that covered both the government and business sectors. The surveys collected information on the amount of waste disposed of in landfills and incinerators managed by governments and businesses. The data from the two surveys were combined to provide a full picture of municipal solid waste, as well as construction and demolition wastes. According to Statistics Canada's Human Activity and the Environment 2000 report, governments and businesses disposed of 20.8 million tonnes of municipal construction and demolition wastes in 1998 compared to 20.7 million tonnes in 1996. This total quantity, which represents 690 kilograms of waste for each Canadian, does not differ significantly from the 1996 quantity, and it can be inferred that the minor increase is growing in proportion to population growth. Table 2 shows the data for 1994, 1996 and 1998 respectively.

Table 2: Canadian Waste Disposal by Province and per Capita: (1998, 1996, and 1994)

	Waste disposed (tonnes)		Waste disposed (tonnes per capita)		
	1998	1996	1998	1996	1994
Canada	20 840 883	20 673 903	0.69	0.69	0.73
Newfoundland	366 280	372 324	0.67	0.67	0.84
P.E.I.	n.a	n.a	n.a	n.a	n.a
Nova Scotia	502 577	553 638	0.54	0.59	0.76
New Brunswick	468 571	505 957	0.62	0.67	0.76
Quebec	5 537 465	5 491 000	0.75	0.75	0.71
Ontario	6 988 157	6 913 786	0.61	0.62	0.67
Manitoba	964 726	947 884	0.85	0.84	0.84
Saskatchewan	848 408	900 210	0.83	0.88	0.91
Alberta	2 527 817	2 435 884	0.87	0.88	0.86
British Columbia	2 458 484	2 413 528	0.61	0.62	0.76
Yukon	n.a	n.a	n.a	n.a	n.a
N.W.T. & Nunavut	n.a	n.a	n.a	n.a	n.a

n.a. = Not available: (to meet confidential requirements of the Statistics Act.)
 Statistics Canada: The Daily, March 31, 2000.

According to Statistic Canada (2000), operating expenditures for businesses in the waste management industry reached \$2.5 billion, with revenues of \$2.9 billion in 1998. The firms invested \$321 million in capital expenditures and employed over 20,000 people across Canada. Compared to the 1995 figures of 39,568, there is a decrease of 19,567 people or 49% of those employed in waste management. Operating expenditures of municipalities and other government bodies providing waste management services totalled \$1.3 billion in 1998. About 59% of these monies were payments to contracted waste management firms.

Since the early 1980s, blue boxes have become a common sight on residential curbsides across Canada. Many provincial, municipal and local jurisdictions have adopted the blue box system of residential recycling to provide a simple way for residents to divert certain recyclable materials from landfills and incinerators. Many provinces do not have comprehensive tracking systems that can adequately assess blue-box diversion rates; data on blue-box diversion quantities are, therefore, often only available at the municipal level and rarely by province.

Paper recycling is the most widely available recycling program in Canada. In 1994, almost 70% of households had access to this program compared to 53% in 1991, with the growth in access varying by region and by size of community. According to Statistics Canada (2000), growth in Quebec and the Atlantic provinces occurred in urban areas with a population of 100,000 and over. In Ontario and western Canada (including Manitoba), where many major urban areas had recycling programs in 1991, growth occurred in smaller-sized communities and rural areas.

As represented in Table 3, while access to curbside recycling has increased from 1991 to 1994 in Canada, households' use of such programs decreased over the same period.

Among the households that had access to paper recycling in 1994, 77% of those living in apartments recycled, compared to 86% of those living in single detached dwellings.

According to Statistics Canada (2000), however, much of the expanded access from 1991

to 1994 occurred in apartment blocks and areas that had previously limited access to recycling facilities.

Table 3: Use of Recycling Programs by Canadian Households: (1991 & 1994)

% of households with access to recycling programs for the following materials			
Material	1991	1994	%Change
Paper	52.6	69.6	17
Metal cans	48.9	67.2	18.3
Glass bottles	49.9	67.4	17.5
Plastics	42.1	62.8	20.7

% of households which use recycling programs to which they have access			
Material	1991	1994	%Change
Paper	85.8	83.1	-2.7
Metal cans	86.2	83.5	-2.7
Glass bottles	86.2	83.5	-2.7
Plastics	84.7	81.7	-3.0

Statistics Canada (1995): Household & the Environment 1994.

2.1.1 Composting

Another household activity that reduces the amount of waste going into landfills is composting. In 1994, 22.7% of households used a compost heap, compost container or composting service compared to 17.4% households in 1991.

As of 1998, more than 1.2 million backyard composters had been distributed to Canadian households; and it is estimated that 30% to 50% of household waste can be composted.

Everything from leaves and grass clippings to vegetable and fruit peelings were composted. In 1998, 1.7 million tonnes of organic materials were composted in

centralized composting operations, producing over 850,000 tonnes of finished compost (Statistics Canada 2000).

2.2 Benefits of Recycling

An effective way to reduce the overall adverse environmental impact of waste disposal and to maintain ecological integrity, while promoting natural resource conservation, is recycling. Yen (1974) advises that recycling is one of the most promising solutions to community solid waste problems. He goes further to support the perception that concern for the environment and for the preservation of natural resources strongly suggests that recycling is the soundest approach to managing urban and municipal solid wastes.

Recycling is not a simple collection and storage of waste materials, but, according to Denison and Ruston (1990):

"recycling is the circuit of collection, processing, manufacture and consumption that diverts raw materials from the waste stream for the manufacturing of new raw materials and products".

Recycling programs provide many benefits to both urban centres and rural municipalities; and these benefits include, but are not limited to, the following:

- 1 Avoiding landfill siting problems
- 2 Assisting governments in achieving waste reduction and other sustainable development goals
- 3 Reducing waste disposal costs

- 4 Providing local employment and stimulating local economic development
- 5 Conserving natural resources and energy in new product manufacture
- 6 Reducing pollution from both manufacturing processes and landfills
- 7 Fostering a strong, local environmental ethic, and
- 8 Recovering valuable materials from the waste stream

2.2.1 Avoiding Landfill Siting Problems

Avoiding landfill siting problems is a benefit derivable from recycling.

Sanitary landfilling is an integral part of existing, as well as new strategies for solid waste management (U.S. EPA 1989; Daiz et al. 1982; Christensen et al. 1989). Landfilling is essential to manage non-recyclable and non-combustible wastes in regions where recycling is not practical due to lack of available sites, as well as unjustifiable costs associated with recycling in these regions.

With the continued growth in population and the corresponding increase in the volume of waste materials produced by the population, the cost of traditional landfill disposal has skyrocketed in some regions of the world in recent years. These increased costs, in part, are due to the fact that many landfill sites around the country have closed or are nearing capacity and will be closing soon.

An example of the magnitude of the landfill problem is the most recent waste management problem in Toronto, Canada. The City of Toronto, with a population of 3

million people, is facing a serious shortage of landfill sites, and the growing controversy is over Toronto's plan to dump its garbage in an environmentally sensitive area in northern Ontario. An abandoned open-pit iron mine, located approximately 600 kilometers northeast of Toronto and now filled with water, was proposed to be used as landfill site for Toronto. Residents of the small Ontario town of Kirkland Lake and its surrounding neighbors have blocked train tracks and protested at Toronto's city hall against the proposed dumping of 1.3 million tonnes of garbage a year at the Adams Mine. While many other communities are facing similar problems, studies have shown that recycling is one of the best ways to reduce the amount of waste going to landfills, thereby reducing landfill siting problems.

When we tackle the problems associated with recycling of plastic materials, cans, bottles, glass, and paper, we are dealing with a major portion of the landfill problem. Rathje's 1989 study supports other researchers' findings that paper represents as much as 50 percent of a landfill by weight. Aluminum beverage cans are, in this sense, a minor culprit, but aluminum is less biodegradable than paper. Actually, there is no reason for aluminum cans to be found in landfills because they are the perfect recyclable materials. Not only is 99 percent of the can recyclable, but it can, in theory, be back on the street as a new can in a few days. Recycling saves as much as 95 percent of the energy used in converting bauxite (MPSP 1999).

It takes less than 3000 cans to fill a cubic yard of landfill. At about 30 cans to the pound, this cubic yard represents about 100 pounds of cans. An average consumption rate of one pound per capita per month means that two typical American families that fail to recycle are actually filling a cubic yard of landfill every year with just aluminum cans. One news release from the Can Manufacturers Institute in Washington, D.C, states that:

.....America recycled 42.5 billion aluminum soft drink and beer cans in 1988, and raised the national aluminum can recycling rate to 54.6% ... a significant increase over the 50.5% rate posted in 1987. In exchange for its efforts, the recycling public earned an estimated \$700 million in 1988. Since 1981, recyclers have earned nearly \$3 billion, according to industry estimates. Last year's record volume, which amounts to some 1.5 billion pounds of aluminum, topped the 1987 mark by almost six billion cans, a 16 % increase over the previous year. Six billion cans put end to end, would circle the earth 19 times. Without recycling this precious resource would be lost.

The aluminum industry not only is the youngest of the major nonferrous industries, it also has had the fastest growth. Thus, the U.S. primary aluminum industry grew from a single firm in 1939 to 12 major producers in 1978. The corresponding rise in production was from 148,000 Mg in 1939 to 5.2 million Mg in 1975 (Diaz, Savage, and Goluek 1982). Three factors threaten the continuation of the prodigious rate of growth, namely, the increasing scarcity of readily processed ore, its high price, and the cost of the energy

required to process the ore. A consequence of the scarcity and high costs is a sharpened interest in recycling aluminum in discarded products (i.e. secondary aluminum). One of the benefits of recycling aluminum becomes obvious when one considers that it takes only 5% as much energy to recover a kilogram of aluminum from scrap as it takes to produce it from ore (Diaz, Savage, and Golueke 1982).

Aluminum is the principal nonferrous metal encountered in Municipal Solid Waste (MSW), accounting as it does in some cases for as much as 90% of the total nonmagnetic metal. However, in relation to the total solid waste stream, the amount seems less impressive in that it constitutes only from 1.0% to slightly more than 1.5% by weight of the total municipal waste stream fraction (Diaz, Savage, and Golueke 1982). Because of the essential role played by aluminum in modern technology, its small fraction by weight does not lessen the necessity for, nor reduce the benefits associated with recovering and recycling the metal from municipal waste.

Even though landfills and incinerators have been used for many decades in different communities, no community welcomes these facilities in their neighborhood. They would rather welcome such facilities be located in another location. As well as assisting the Province of Manitoba in achieving its waste reduction and SD goals, recycling will reduce the demand for landfills and incinerators and, in turn, reduce the “not in my back yard” syndrome.

2.2.2 Assisting Governments and Other NGOs to achieve their SD goals.

With successful recycling programs, the government of Manitoba, as well as other jurisdictions, will be more likely to achieve their waste reduction and clean environment standard goals and regulate the number of substandard waste disposal sites in the province. In a Government of Manitoba news release, the then Environment Minister, the Hon. Glen Cummings, stated:

“ ...this recycling program gives municipalities and all Manitobans an important role to play in safeguarding our environment. It will promote the conservation of valuable renewable and non-renewable resources, while reducing pressures on local waste disposal grounds.” (February 16, 1995)

Furthermore, with the enactment of the Province's Waste Disposal Ground Disposal Regulation in 1991, emphasis was placed on reducing substandard waste disposal sites in the province. Recycling encourages the reduction of wastes generated by the population, the reuse of what would ordinarily be thrown away as waste, and the promotion of re-manufacturing raw materials from what would otherwise be thrown away as garbage. All these approaches will lead to conservation of our natural resources, a road to sustainable development, and, therefore, will provide strong benefit to communities.

2.2.3 Reducing Waste Disposal Operating Costs.

By reducing the quantity of waste generated and by reusing and recycling materials, reductions in the great costs of waste disposal associated with transportation, equipment and operations of landfills and incinerators could be achieved. In the Kirkland Lake, Ontario, Canada case, garbage would be shipped by rail to the proposed site that is located approximately 600 kilometers away. When the costs associated with transportation, equipment and operations of landfills are summed, the direct waste management costs for the proposed Adams Mine site would be exorbitant.

Table 4 shows expenditures of Government Pollution Abatement and Control (PAC) for 1988 through 1996, and these figures support the argument that an effective recycling program has the potential for reducing PAC costs by way of reducing wastes that have the potential to pollute the environment. Dollars saved from recycling could be used in other areas that would help stimulate local economic development.

Table 4: Canadian Government's Pollution Abatement and Control Expenditures.
(Million of dollars)

YEAR	Total PAC Expenditures	Waste Collection & Disposal (WCD) Costs	WCD Costs as a percent of Total PAC
1988	3,376	887.9	26.3
1989	4,044	1,039.3	25.7
1990	4,715	1,221.2	25.9
1991	4,886	1,324.1	27.1
1992	5,015	1,429.3	28.5
1993	5,101	1,346.7	26.4
1994	5,433	1,575.6	29.0
1995	5,652	1,367.8	24.2
1996	5,424	1,339.7	24.7

Statistics Canada. Human Activity and the Environment 2000.

Another benefit from recycling is the provision of local employment and revenue to communities which stimulates local economic development.

2.2.4 Stimulating Local Economic Development.

Recycling programs have some economic benefits for both urban and rural communities by providing public and private job opportunities as well as revenue to communities. By closing some landfill sites, new recreational sites could be developed and become available to the communities for other uses. The new sites could create tourist attraction centres that would become sources of employment as well as revenue to the community. The collecting, processing and remanufacturing of raw materials from collected materials have proven to be excellent sources of employment and local economic development in

the province of Manitoba. The Pembina Valley Recycling Network and Winkler facilities are living examples. Revenue from the tourist centres would be used for better up-keep of waste management and recycling facilities within the community. As illustrated in Table 5, recycling programs also provide direct and indirect employment opportunities through the public and private sectors. These benefits would translate into improving the well-being of the community members and others who use the facilities; however, a well orchestrated product stewardship is needed to realize these benefits. Between 1994 and 1996, employment in waste management within the local government sector increased by 18% nationally with Manitoba posting the second highest percentage increase in the nation.

Table 5: Employment in the Waste Management Industry, 1994 and 1996

	Total Employment		% Change
	1994	1996	
Newfoundland	75	164	119
P.E.I.	--	--	--
Nova Scotia	180	290	61
New Brunswick	140	128	-9
Quebec	1,482	1,757	19
Ontario	2,698	2,960	10
Manitoba	258	549	113
Saskatchewan	152	310	104
Alberta	747	953	28
British Columbia	950	767	-19
Yukon	--	--	--
N.W.T. & Nunavut	--	--	--

(Includes full-time and part-time employment).

Statistics Canada, 1998. Waste management survey.

2.2.5 Conserving Energy and Natural Resources

Conservation of energy and natural resources is another benefit derivable from recycling. Recent attention focused on energy costs and energy shortages is placing new emphasis on recycling because buried or burned garbage means energy is being wasted.

Conservationists say that we can save close to half the total energy consumption that we now use for mining and processing raw materials. Furthermore, compared to the energy expended for original manufacture, it takes 90% less energy to remanufacture aluminum or plastics, 50% less for steel or paper, and 30% less for glass (Innovation Groups, USA 1991; MPSC 2000).

The approximately 2.2 million tons of aluminum recycled since 1986 in the United States of America saved about 8 million tons of bauxite, 4 million tons of chemicals, and 30 billion kilowatt hours of electricity. The electricity saved is enough power to provide all the homeowners of Ohio with electricity for about one year. And yet today Americans still throw away – and pay good money to bury – about 40 percent of their aluminum cans. The extent of this negligence is seen in the following figures provided by Can Manufacturers Institute of Washington, DC.

Firstly, the per capita consumption of beverages in America produces about one pound of cans per month. In 1998, the total number of aluminum cans produced were: beverage cans 77.9 billion; food 2.2 billion; miscellaneous 12 million, for a total aluminum production of 80.1 billion cans. The national recycling rate for 1988 was 54.6 percent.

While it is increasing every year, and now exceeds 60 percent, in some areas of the rust belt, and specifically in Northern Ohio, the recycling rate is only about 30 percent to 35 percent, which means that the remainder of the cans, at the best, ends up in a landfill, or at worst, litter parks and roads.

2.2.6 Controlling Pollution

A cleaner environment is also a benefit achieved through waste reduction, reusing and recycling of materials. It is more costly to clean a polluted environment than it would be to prevent its pollution. Most of the opposition against the proposed Adams Mine landfill site in Ontario stems from environmental concerns that cracks in the rock formation would allow contaminated water to seep out and pollute local ground water. Recycling is an important variable for preventing pollution. Through recycling, and hence natural resources conservation, the present generation would meet its clean environmental needs without compromising the ability of the future generations to meet their own needs. This is one beneficial element toward sustainable development; and a strong goal for the province of Manitoba. Fostering a strong environmental ethic is another benefit from recycling.

2.2.7 Fostering Strong Local Environmental Ethics

Recycling has the potential of reducing the unethical attitudes of some municipal residents who store their waste for a period of time and then dump it somewhere, provided they are not caught doing so. Recycling also has the potential of reducing the

inefficient and improper methods of disposal of solid wastes that result in scenic blights, and which increase rodent and insect vectors of diseases. Inefficient and improper methods of disposal of solid wastes also have adverse effects on land use and values, create public nuisances and interfere with community life and development.

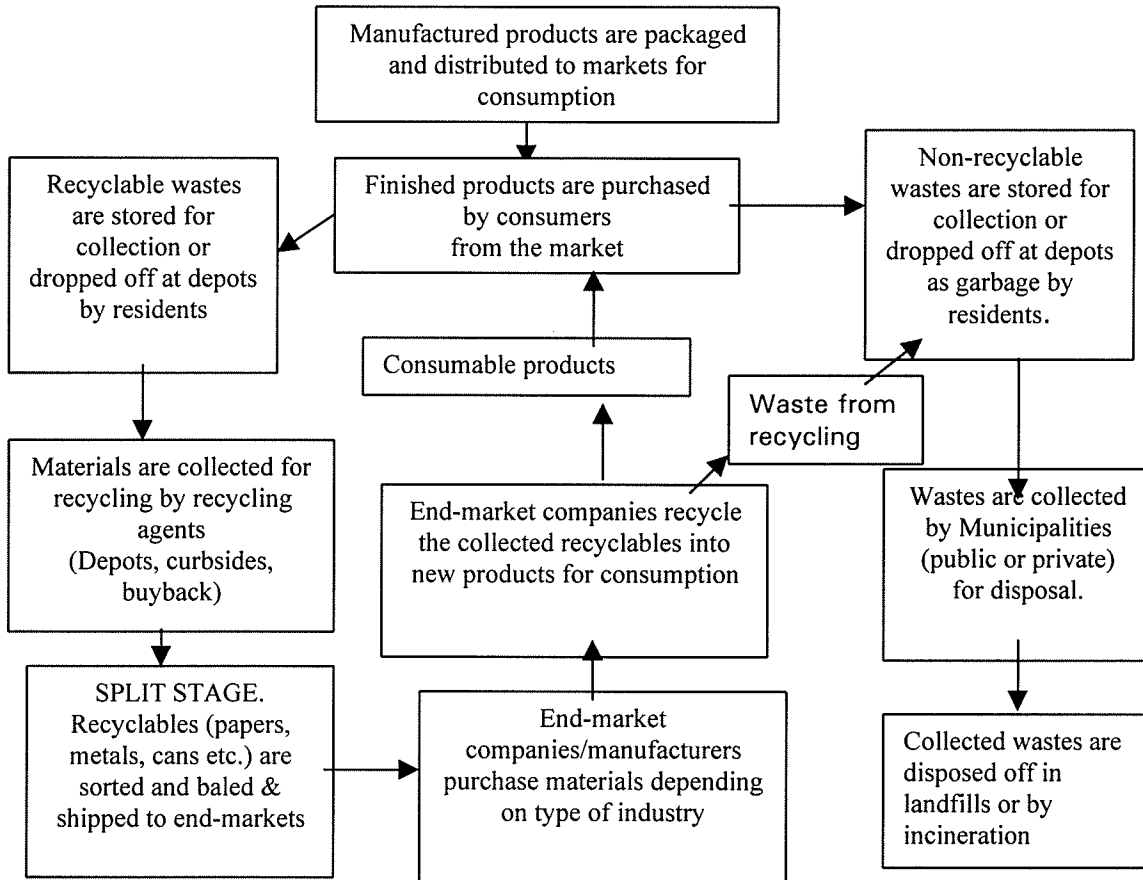
2.2.8 Recovering Valuable Materials from the Waste Stream

Valuable materials are often abundant in waste streams, and, as noted earlier, aluminum cans and paper products are valuable materials that should not be allowed to go to landfills. Recycling is a perfect means of recovering these materials from the waste stream thereby helping to conserve our natural resources. With waste reduction policy and programs such as recycling, both renewable and non-renewable resources would be better conserved for the future generations. This is key to the World Commission on Environment and Development's equity requirement for Sustainable Development. In light of recovering valuable materials from the waste stream, it can be inferred that reduction of waste will translate into a reduced need for waste disposal facilities. This reduction would, in turn, translate into cost-savings in relation to environmental costs as well. The benefits from recycling could be many. Firstly, there would be the direct savings from reduced demand for, and operation of, landfills and incinerators. Secondly, there would be the direct savings that are associated with the original manufacture of materials. Further, there would be indirect savings related to reduced health costs associated with environmental pollution.

2.3 Essentials of Recycling

Recycling can be seen as a system of different components. Figure 3 illustrates how a recycling system is made up of various steps that are necessary to divert materials from waste disposal grounds. For an effective recycling system, all the components have to be properly linked as illustrated in Figure 3. As well, it should be noted that some end-market companies that make new products from the collected municipal solid waste could be both the “beginning” and the “end” of the system. The companies may be the original manufacturer of the market product from the original material (e.g. aluminum to can), or some companies may specialize in recycling and set up as a subsidiary to a mother company. According to MPSC, unless someone makes something useful from the material collected from our communities, the materials have not been recycled. Therefore, collected material must have an end use.

Fig. 3: A Flowchart of Recycling Processes



MPSP Municipal Recycling Handbook (Modified & expanded by Okwumabua, N. 2001)

2.4 Relationship between Recycling and Stewardship

Stewardship can be applied to different waste streams, but the one most often discussed is packaging. Different definitions of packaging stewardship exist, but all center on the establishment of responsibility. The National Packaging Task Force (NPTF), appointed by the Canadian Council of Ministers of the Environment (NPTF, 1994, p.1), identifies packaging stewardship as:

“the principle by which industries assume responsibility for the environmental impacts caused by the packaging that they introduce into the marketplace” (NPTF, 1994, p.1).

Most consumers rarely think about the packaging of the goods that they buy as part of their total garbage, and yet it is estimated that every year the average Canadian family throws out a tonne of packaging (Pitch-in Canada, 1998). Packaging aids in revealing the status of our modern technological achievements, and the major benefits of packaging are that it preserves our food and protects what we buy. Virtually all manufactured and processed products require packaging during some phase of their production and distribution, and packaging is also the largest single contributor to one of our nation’s most troubling environmental problems, the municipal solid waste crisis.

In 1990, the Canadian Council of Ministers of the Environment (CCME) and representative of Canadian industries established the National Packaging Protocol (NPP), a commitment to reduce the amount of packaging going to landfills by 50% from the 1988 level by the year 2000 (CCME, 1998). In 1996 approximately 2.6 million tonnes of packaging was sent for disposal, compared to 5.4 million tonnes figure of 1988. This 51% reduction exceeds the NPP milestone target of 35% by 1996 and 50% by year 2000 (Statistics Canada, Human Activity & the Environment 2000). According to Statistics Canada (2000), half of these diversions were achieved through the use of less packaging

material, as well as reuse and recycling initiatives. Tables 6 through 8 present levels of packaging consumed, reused, recycled & discarded during 1988, 1992 and 1996.

Table 6: 1988 levels of packaging consumed, reused, recycled & discarded (tonnes)

Material	Consumed	Reused	Recycled	Discarded	% Discarded
Wood - pallets, boxes)	1,019.9	312.8	22.4	684.7	67.1
Paper - Boxes, labels, cardboard	2,363.9	--	437.1	1,926.8	81.5
Glass	821.4	89.9	56.5	675.0	82.2
Plastic – containers & wrap	1043.5	--	21.7	1,021.8	97.9
Metal – excluding aluminum	959.0	--	23.7	935.3	97.5
Aluminum	76.3	--	32.7	43.7	57.3
Multi-material	112.2	--	--	112.2	100
Textiles	19.8	--	--	19.8	100
Other	--	--	--	--	--
Total	6,416.0	402.7	594.1	5,419.3	84.5

Statistics Canada, 2000. Human Activity and the Environment 2000.

Table 7: 1992 levels of packaging consumed, reused, recycled & discarded (tonnes)

Material	Consumed	Reused	Recycled	Discarded	% discarded
Wood - pallets, boxes)	1,839.2	942.1	64.2	832.9	45.3
Paper - Boxes, labels, cardboard	3,683.7	571.2	1,599.9	1,512.6	41.1
Glass	1,950.6	1,166.2	291.7	492.7	25.3
Plastic – containers & wrap	1,618.8	543.9	135.8	939.1	58.0
Metal – excluding aluminum	954.9	471.3	211.2	272.4	28.5
Aluminum	100.0	7.4	92.4	0.2	.002
Multi-material	184.1	36.0	1.2	146.9	79.8
Textiles	8.6	3.4	--	5.1	59.3
Other	108.6	67.8	3.8	37.0	34.1
Total	10,448.4	3,809.2	2,400.1	4,238.7	40.6

Statistics Canada, 2000. Human Activity and the Environment 2000.

Table 8: 1996 levels of packaging consumed, reused, recycled & discarded (tonnes)

Material	Consumed	Reused	Recycled	Discarded	% Discarded
Wood - pallets, boxes)	2,484.1	1,704.0	189.0	591.2	23.8
Paper - Boxes, labels, cardboard	2,441.3	345.3	1,328.1	767.9	31.5
Glass	1,382.0	823.0	303.7	255.3	18.5
Plastic – containers & wrap	1,288.8	451.3	133.8	703.7	54.6
Metal – excluding aluminum	963.1	660.1	114.5	188.4	19.6
Aluminum	129.9	21.1	60.7	48.0	37.0
Multi-material	145.6	34.0	69.6	42.0	28.8
Textiles	15.4	5.5	1.4	8.4	54.5
Other	55.7	22.0	--	33.7	60.5
Total	8,905.7	4,066.2	2,200.7	2,638.5	29.6

Statistics Canada, 2000. Human Activity and the Environment 2000.

Tables 6, 7 & 8: Total consumed includes new packaging; packaging imports minus exports; reused packaging; recycled packaging from industries, households, commercial and institutional establishments; and discarded packaging. (Statistics Canada, 2000. Human Activity and the Environment 2000).

The Canadian Industry Packaging Stewardship Initiative which was proposed in Ontario, (Ontario, 1994a), suggested that all who are responsible for introducing packaging to the marketplace should be responsible for diverting packaging from disposal, through reuse and recycling under the following 13 principles.

1. Packaging stewardship initiatives should ensure that packaging has a minimal effect on the environment
2. Packaging stewardship programs should recognize and promote the hierarchy of 3R; source Reduction, Reuse and Recycling, in support of general resource conservation.

3. In keeping with the mutual goal to reduce packaging waste, consumers, industry and governments share the responsibility for the environmental impacts of packaging waste and for making packaging stewardship programs viable in Canada. This approach combines the concept of user pay with that of producer responsibility.
4. All stakeholders should be involved and responsible in developing and implementing stewardship programs.
5. Packaging stewardship initiatives should be comprehensive and apply to all packaging used in Canada.
6. Packaging stewardship should be based on the establishment and maintenance of a level playing field which is inclusive and fair:
 - i) Between packaging and other reusable or recyclable components of the municipal solid waste stream;
 - ii) Between imported and domestic packaging
 - iii) Between packaging material types
7. Packaging stewardship programs should strive for national consistency, balanced with flexibility to respond to regional differences.
8. Full cost pricing is essential so that stewardship will begin the process of fully internalizing the costs of managing wastes, and sending the correct signals to the consumers and producers of packaged goods.
9. Packaging stewardship recovery systems should consider markets, as well as other economic and environmental factors.

10. Packaging stewardship should promote market development and the use of recovered materials.
11. Packaging stewardship includes a responsibility for monitoring, evaluation and education.
12. A packaging stewardship model should meet its environmental objectives in the most efficient, cost effective manner.
13. Stewardship of packaging extends beyond national borders.

(CIPSI: National Packaging Task Force, 1994)

The relationship between stewardship and recycling is a critical one for the following reasons:

- Stewardship can help set standards for material used by manufacturers in packaging their products, thus ensuring they are recyclable and utilize recycled materials.
- Stewardship can help locate manufacturers of hazardous packaging materials and identify appropriate measures to control such materials.
- Stewardship can set levies and/or taxes on pollutants in accordance with polluter-pay principles.
- Through such levies, stewardship can provide funding to municipal recycling programs.
- Stewardship can help target waste sources for reduction.
- Stewardship can provide information for waste management policy and program guideline development and deliveries.

Effective stewardship and recycling of waste depends upon technology and other resources required for processing collected materials into new raw materials as outlined in Figure 3. Market development for the recycled raw materials within the manufacturing industries, the promotion of recycled consumer products to appeal to consumers and consumer-satisfaction with the finished product are other variables to consider for effective recycling.

In 1997, the Canadian Council of Ministers of the Environment modified their Packaging Stewardship definition to include all that benefit from packaged products, meaning that all consumers of packaged products are held responsible for their management.

Stewardship costs are, therefore, often passed on to the consumers by distributors and manufacturers. For instance, the two cent levy on soft drink containers in Manitoba is charged to consumers of the product. Consumers are also responsible for making the appropriate decisions about their waste materials by choosing recycling options and recycled materials when possible.

2.5 Chapter summary

In summary, waste management is an important municipal function. Furthermore, recycling and stewardship are related and are critical to waste management. Both recycling and stewardship are beneficial to both urban centres and rural municipalities.

With respect to recycling, this chapter has highlighted that:

- Recycling reduces waste going to landfill, and hence the demand for landfill.
- Recycling assists both governments and non-government organizations to achieve their waste reduction and other sustainable development goals.
- Recycling helps in reducing waste disposal costs and encourages recovering valuable materials from the waste stream.
- Recycling has social benefits in providing local employment and stimulating local economic development.
- Recycling has environmental benefits in conserving natural resources and energy in new product manufacture, reducing pollution from both manufacturing processes and landfills, as well as fostering a strong local environmental ethic.

With respect to stewardship, this chapter has also demonstrated that:

- Stewardship is essential to effective recycling and is an ideal way of generating dollars needed to fund recycling programs.
- Stewardship can help set standards for material used by manufacturers in packaging their products, thus ensuring they are recyclable and utilize recycled materials.
- Stewardship can help locate manufacturers of hazardous packaging materials and identify appropriate measures to control such materials.
- Stewardship can set levies and/or taxes on pollutants in accordance with polluter-pay principles.

- Through such levies, stewardship can provide funding to municipal recycling programs.
- Stewardship can help target waste sources for reduction.
- Stewardship can provide information for waste management policy and program guideline development and deliveries.

Chapter 3 provides an overview of the waste management, recycling and stewardship, activities towards waste reduction and resource conservation that were in place in the province of Manitoba both prior to and after the establishment of Manitoba Product Stewardship Program.

CHAPTER 3

Recycling and Stewardship in Manitoba

3.0 Overview

Recycling has had a long history in Manitoba. As outlined in this chapter, recycling already existed in some towns and municipalities of Manitoba, including the South-central Recycling Region of the province, before the inception of the Manitoba Product Stewardship Corporation (MPSC) in March of 1995. In 1995, 10 recycling networks, involving 60 municipalities, were in operation throughout the province (WRAP 1996). These towns and municipalities operated at different capacities and collected varying materials for recycling. Some of these communities were more organized than others, but all shared similar demographic and social structures, and many were supported by volunteer community efforts. These activities matured to a point where 5,500 tonnes wastes were diverted in one year. The province stimulated further recycling activity with the creation of MPSP. Since its inception, many communities now have recycling activities, and the quantity of materials diverted from landfills has increased to 38,827 tonnes, and support payments amounted to \$5.2 million in 2000 (MPSP, March 2001).

Beginning in the early 1990's in Manitoba, some municipalities teamed up with some NGOs to operate recycling programs. This initiative led to the establishment of free and fee-for-service depots and curbside recycling programs. Despite the considerable expansion in the level of recycling achieved by 1993, barriers to further expansion of convenient, widely available recycling services were quite apparent. Some existing

programs that were subsidized by enthusiastic citizens and local activists were in danger of collapse from volunteer burn-out and lack of adequate funding. Municipalities facing difficult budgetary situations were reluctant to take on the additional financial liability of potentially expensive new initiatives. Fee-for-service recycling programs were only able to attract an estimated 10% of Manitoba households that were prepared to pay for recycling services, a situation which left the majority of the population without convenient recycling opportunities (WRAP 1996).

The purpose of this chapter is to provide an overview of waste management, recycling and stewardship activities in Manitoba, prior to and post MPSP. The chapter is organized into the following sections.

- Manitoba Recycling and Stewardship Regulatory Framework,
- Manitoba Product Stewardship Corporation (MPSC),
- MPSP Program Objectives and Characteristics,
- Data on Waste Management and Recycling,
- Community Support for Recycling
- Recycling Activities and Growth
- Funding of Manitoba Recycling Program, and
- Promotion and Education approach to recycling in Manitoba
- Chapter Summary.

3.1 Manitoba Recycling and Stewardship Regulatory Framework

Prior to the inception of the Clean Environment Act in 1970, legislative authority regarding the disposal of solid wastes in the province of Manitoba resided solely in the Department of Health and Public Welfare. Section 33 (17) of the Public Health Act (1965) empowered the Lieutenant Governor-in-Council to make any regulations respecting the location, construction, maintenance, cleansing and disinfection of waste disposal grounds, incinerators and other means of disposing of refuse and waste materials. Manitoba Regulation 85/65, Section 48-5-6D, outlined specific requirements for the establishment and operation of waste disposal grounds. Section 53 of this regulation required that all waste disposal grounds:

- be served by an all-weather access road;
- be subject to the regular addition of cover material;
- have an adequate rodent and pest control program;
- have adequate identification and warning signs.
- prohibited open burning
- be located 100 yards from existing public highway or railways, and ¼ mile from any dwelling, school, habitable building or cemetery.

As well, no waste disposal ground was to be located where it could cause pollution to surface or groundwater sources of potable water.

In 1990, the Government of Manitoba passed the Waste Reduction and Prevention (WRAP) Act. The WRAP Act established the regulatory framework for the province to

meet the commitment made in 1989 by the government to reduce the amount of MSW (Municipal Solid Wastes) produced in the province by 50%, from a base year of 1988 (Manitoba Environment, 1991).

The WRAP Act enables the Province to assign responsibility for the stewardship of products and material that have the potential to become waste. Even though the WRAP process has encouraged voluntary approaches to waste minimization efforts, the WRAP Act still enables the Minister in charge to hold business responsible for ensuring that actions are taken to reduce or prevent waste. To meet the objectives, where voluntary options are not feasible or pursued, the WRAP Act enables the Government to apply deposits, WRAP levies or other financial charges on designated materials.

In 1990, the Government of Manitoba established the Multi-Material Stewardship Corporation and Waste Reduction and Prevention (WRAP) Funds in Manitoba to further encourage recycling in communities of all scales in the province. The WRAP Fund was established to provide or pay for any or all of the following:

- establishing and administering a Waste Reduction and Prevention program for designated materials;
- education programs for the purpose of the waste reduction and prevention program for designated materials;

- expenditures incurred in the collection, transportation, storage, processing and disposal of designated materials in connection with a waste reduction and prevention program;
- establishing and administering a waste reduction and prevention program for research and development activities related to the management of designated material;
- promotion and development of activities and economic instruments to encourage reduction and prevention of waste designated material;
- the appropriate disposal of waste designated material;
- salaries and other costs of the Board and the Fund;
- salary and other costs of government for the administration and enforcement of the Act and this regulation as they relate to the responsibilities of the Board and the regulations respecting reduction and prevention of waste designated material.

(Waste Reduction & Prevention Act. C.C.S.M., c. W40 Sec. 8, p. 7)

Expansion of Manitoba's regional recycling network system has been further supported through the activities of the Manitoba Association of Regional Recyclers (MARR). This network allows municipalities to assist one another in their recycling efforts. In 1995, 10 recycling networks were in operation throughout the province involving over 60 municipalities. Following the model of MARR, the Pembina Valley Recycling Network was established in 1990 (WRAP 1996).

Even though no central program was established to provide funding for a province-wide recycling program, Table 9 shows that, between 1990 and 1995, the Manitoba government provided over \$5.9 million in funding support to 211 waste management related projects in the province. The Sustainable Development Innovations Fund (SDIF), originally named the Environmental Innovations Fund, was the source of financial support for recycling, waste reduction and other sustainable development projects. The general philosophy applied to project support has been to facilitate the development of cooperative solutions. Manitoba SDIF derives its revenues from environmental protection taxes applied to liquor containers and disposable diapers sold in the province.

To reinforce and encourage the growing number of innovative and cost-effective recycling programs that were initiated under the WRAP Program, financial support was allocated to projects that encouraged regional approaches. In 1992, funding was provided under the Recycling Network Development Program to help establish regional processing centres to handle the recycling of old newspaper. Old newspaper was identified as the largest single recyclable material (up to 60% by weight) being handled at recycling facilities. In addition, municipalities were encouraged to examine the feasibility of regional integrated waste management programs.

To assist in the development of regional systems, the Regional Waste Management Assistance Fund (RWMAF) was established in 1992. In its first three years of operation, a total of \$400,000 was allocated to 22 municipal projects involving 90 municipal

corporations. The fund was completed in the 1993/94 fiscal year (Ferguson, J. 1994; Manitoba Environment 1997). Matching grants, to a maximum of \$20,000, were made available to municipalities investigating the feasibility of regional waste management system (Manitoba Environment, 1997). To qualify, the overall system plan had to include waste reduction as a component, leading to recycling and hence resource conservation.

Table 9: Manitoba Funding for Projects Related to Waste Management (1990-1996)

Project Category	1990/91 \$ Amount (#projects)	1991/92 \$ Amount (#projects)	1992/93 \$ Amount (#projects)	1993/94 \$ Amount (#projects)	1994/95 \$ Amount (#projects)	1995/96 \$ Amount (#projects)	Total \$ Amount (#projects)
Recycling and Stewardship	\$152,450 (11)	\$26,300 (4)	\$111,258 (11)	\$567,720 (11)	\$1,847,439 (3)	\$30,000 (3)	\$2,735,167 (40)
Composting	\$93,000 (3)	\$4,000 (3)	\$5,000 (1)	Nil (0)	\$10,000 (1)	Nil (0)	\$112,000 (6)
Education and Awareness	\$173,700 (10)	\$95,865 (10)	\$180,500 (10)	\$340,975 (18)	\$590,423 (33)	102,650 (8)	\$1,484,113 (88)
Regional Waste Management	\$14,300 (1)	\$166,000 (1)	\$325,000 (13)	\$113,125 (13)	Nil (0)	\$60,000 (3)	\$678,425 (39)
Regional Recycling	\$91,225 (2)	\$140,000 (2)	\$117,500 (3)	\$15,000 (1)	\$28,000 (2)	Nil (0)	\$391,725 (14)
Market Development	\$20,000 (1)	\$39,700 (3)	\$137,000 (5)	\$104,019 (5)	\$181,000 (8)	\$35,000 (2)	\$16,719 (24)
TOTAL	\$544,675 (28)	\$471,865 (32)	\$876,258 (40)	\$1,140,89 (48)	\$2,656,862 (47)	\$227,650 (16)	\$5,918,149 (211)

Adopted from Manitoba Waste Reduction and Prevention Strategy Report (1996)

Manitoba's regulatory framework, under the WRAP Act, has focused on the development of three regulations since 1992. The Beverage Container and Packaging Regulation was established to assess environmental levies on packaging materials, as well as to hold manufacturers of the containers responsible for their stewardship. It was amended in January, 1995, to increase the WRAP levy on beverage containers from 1/10 of a cent to two cents to support recycling activities in Manitoba. This regulation was later repealed

and replaced by the Multi-Material Stewardship (Interim Measures) Regulation which was enacted in March, 1995. The primary purpose of this Regulation was to establish corporations at arm's length from government to direct funding to programs for the reduction and recycling of waste from a list of designated materials.

Many of the stewardship principles (listed on page 34) developed during negotiations with the packaging and beverage industries around the creation of this regulation have been embodied in the Manitoba Product Stewardship Programs. These principles are also consistent with the Guiding Principles for Packaging Stewardship adopted nationally by the Canadian Council of Ministers of the Environment in 1996 as part of the multi-stakeholder National Packaging Protocol effort (WRAP, 1996).

The first Waste Reduction and Prevention (WRAP) strategy report, issued in 1991 under the authorities of the WRAP Act, identified this concept of "distributor responsibility" as a focus of any waste minimization activities which may take place in the province (Manitoba Environment, 1996). The report focused on the following four areas of responsibilities:

1. Promoting cooperation among stakeholders and developing partnerships;
2. Supporting the development of material collection and processing capabilities;
3. Supporting 3R education and information dissemination; and
4. Coordinating WRAP initiatives.

The government suggested that the theme of the WRAP Strategy Report for 1991 be built on the theme of the Recycling Action Committee's (RAC) central recommendation. RAC recommended that the "distributors of products or materials with the potential to become waste" should establish waste-reduction programs or financially contribute to waste minimization solutions (Manitoba Environment, 1996). This recommendation was endorsed by government, but Fenton & Sinclair (1996 - 2) report that the program which has evolved differs somewhat from that which was initially proposed and applauded by government and others.

The Multi-Material Stewardship (MMS Interim Measures) Regulation has also demonstrated the use of economic instruments and adaptive resource management approaches in place of command-and-control regulatory requirements in an attempt to efficiently achieve sustainable development goals. In this context, it can be said that the MMS Interim Measures Regulation is attempting to achieve SD goals by using available economic and natural resources to initiate some resource conservation processes. As well, it is using the experience gained from the processes to modify and improve the processes on an ongoing basis.

3.2 Manitoba Product Stewardship Corporation (MPSC)

Under the Manitoba Round Table's Strategy for Solid Waste Minimization and Management, a central obligation of the provincial government is to effectively reinforce waste minimization activities and to ensure equitable opportunities and access to waste minimization programs for program participants.

Under the Manitoba WRAP Act, the government of Manitoba established the Manitoba Product Stewardship Corporation (MPSC) in January, 1995, to provide financial support for household recycling services in all communities of the province. This action was intended to encourage efficient collection, processing and marketing of recyclable commodities in the province.

The Manitoba Product Stewardship Program evolved from the Canadian Industry Packaging Stewardship Initiative (CIPSI) process in Manitoba. In Manitoba, CIPSI was formally presented in July of 1993, but it failed after much negotiation and debate. CIPSI proposed to collect a levy on products to provide funding support of municipal recycling programs, but negotiation terminated in 1994 due to the failure of government and industries to agree on levels of financial liability and specific program elements (Manitoba Environment, 1996). Even before the CIPSI process started, a proposal was made to the government of Manitoba by the Manitoba Recycling Action Committee which suggested that distributors become responsible for minimizing the impacts of the waste generated from their products (Fenton & Sinclair, 1996 - 1; Manitoba Environment, 1996).

Manitoba Environment (1996) indicates that, through the WRAP Strategy, the theme of "distributor responsibility" is still considered central to the achievement of waste reduction in the province. The WRAP Act was the legal basis for the Multi-Material Stewardship (Interim Measures) Regulation (MR 39195) which was put in place in

March, 1995. This Regulation established the major components and functions of MPSC, which include:

- the Manitoba Product Stewardship Corporation (MPSC), and Multi-Material WRAP Fund;
- establishment of the levy system on beverage containers;
- establishment of the requirement of a new business plan for MPSC operations every three years, and an annual report to the Minister responsible; and
- setting the designated materials for collection.

MPSC's main operations and functions are essentially controlled through this regulation. The provincial government is responsible for establishing the activities and responsibilities of the MPSC and for defining the materials to be levied to raise funds for the Multi-Material WRAP Fund that is managed by MPSC. While the corporation has been formed to operate the funds and the day to day activities of MPSC, the government of Manitoba largely controls the business of the program, its existence and powers. The government retains much of the power for shaping and creating any further stewardship initiatives.

This division of roles between MPSC and the government is an important element in understanding waste reduction initiatives in Manitoba. The MPSC is only able to put forward initiatives and activities where it has the power to do so. It must be responsible for competently carrying out the functions it has been mandated to perform, including

multi-material recycling program assistance and fund management. Therefore, any evaluation of the MPSC must consider this relationship in order to objectively criticize or credit the corporation (Holmes, G. 1999).

Since the release of the 1991 WRAP Strategy Report, numerous stewardship initiatives have been established in Manitoba, including the Manitoba Product Stewardship Program as part of this overall strategy. Measures to ensure that such items as oil, tires and pesticide containers are handled after their initial uses are now in place, but they are beyond the scope of this research. The MPSP is, therefore, not the only stewardship initiative in Manitoba, but it is likely the most prominent in the minds of Manitobans due to the number and variety of beverage containers on which a levy is applied (Holmes, G. 1999).

3.3 MPSP Program Objectives and Characteristics

MPSC (1998) lists the following as the objectives of the Manitoba Product Stewardship Program:

1. to maximize reduction, reuse, recycling of designated materials
2. to hold distributors of products and materials with the potential to become waste in Manitoba responsible for a share of the costs of managing those wastes
3. to incorporate the costs of waste management into the product price
4. and to provide stable, long term funding to support municipal recycling in Manitoba.

MPSC (1997) outlines the day to day functions of the MPSC as:

- establishing and administering a waste reduction and prevention program for designated materials consistent with principles of sustainable development;
- providing for effective, efficient, and economical waste management of designated materials.
- publishing and releasing a business plan every three years
- administering the Multi-Material WRAP Fund

One of the most significant characteristics of the MPSP is the fact that it is completely voluntary. The program is structured so as to provide funding to recycling programs operating at the local levels, including cities, towns, and municipalities of Manitoba.

However, there is no requirement or stipulation that requires any jurisdiction to take part in the program- the program is voluntary. The Manitoba government, responsible for the design and construction of the arm's length program, has not required any jurisdiction to maintain a recycling program, nor has the government prevented local governments from opting out of the program either now or in the future (Holmes 1999).

The methods of collection and distribution of funds make MPSP unique when compared with other similar programs. MPSP collects the levy from distributors and the manufacturers, and both the distributors and the manufacturers pass on the cost to consumers. Some retailers include the environmental levy in product counter price while other retailers prefer to collect the levy from consumers at checkout counters as a specific item. Because the levy is collected from consumers of products, not manufacturers, it is,

therefore, unclear how much stewardship responsibilities are assigned to manufacturers. Furthermore, levies collected on specific products are distributed to cover all recyclables in the province; therefore, some products go without levy but are still collected and recycled.

Apart from the municipal support element of the MPSP, there are other components that have been identified by Manitoba Product Stewardship Corporation. These components include, but are not limited to, Northern Community Assistance (NCA) –(additional transportation assistance of \$40 per tonne is available); litter abatement; education; and market development.

3.4 Data on Waste Management and Recycling

Even though waste management and recycling have been practiced for decades in Manitoba, records show that local data on recycling have been very scanty or nonexistent in most municipalities in Manitoba. It is only in recent years that waste management has been taken seriously and that recyclables are being collected in urban centres and many rural regions of the province. Furthermore, education in waste-management and in resource conservation have received more attention in recent years. With the evolution of recent waste management policies and programs on recycling initiatives, local municipalities are becoming more aware of the essentials and benefits of recycling.

Table 10: MPSP 1995 Eligible Recycling Materials and Recovery Rates.

Material	Eligible (Tonnes)	Recycled (Tonnes)	%Recycled
Newspapers and flyers	40,000	9,591	24%
Aluminum containers	1,800	275	15%
Glass containers	19,900	2,645	13%
PET (#1) plastic containers	2,800	477	17%
Steel containers	10,800	1,065	10%
Magazines/catalogues	3,000	381	13%
Gable top cartons	2,500	182	7%
Boxboard	13,100	943	7%
Telephone directories	1,800	N/a	N/a
Total	95,700	15,559	16%

Manitoba Product Stewardship Corporation 1995/96 Annual Report.
 (MPSC has pointed out that this table does not include materials recovered through ICI sources).

In 1971, a number of rural administrations in Southern Manitoba approached the Government of Manitoba for help in developing a scheme that would enable them to share resources and thus reduce costs associated with the provisions of waste disposal services to their residents (Plantje, W. W. 1980). Similarly non-government organizations started recycling initiatives before the Government of Manitoba created MPSC in 1995. Environmental groups, non-government organizations, advocacy groups, naturalist groups and others have been the main players in showing strong community support for recycling.

Before the inception of MPSP in 1995, Manitoba Environment maintained comprehensive data on beverage container sales and recovery levels as shown in Tables 11 and 12 respectively.

Table 11: Beverage Container Sales in Manitoba (1993-1994)

	Numbers Sold			Weight Sold (kg)		
	1993	1994	Change	1993	1994	Change
Deposit Refillable	161,716,000	161,364,700	-0.2%	43,971,600	43,592,500	-0.9%
Deposit Non-Refillable	21,851,300	20,103,200	-8.0%	382,300	343,700	-10.1%
Class A Total	187,567,200	181,467,800	--3.3%	44,353,900	43,936,100	-0.9%
Glass	17,219,900	21,719,500	26.1%	3,768,200	4,760,900	26.3%
Liquor Glass	13,506,400	13,426,800	-0.6%	6,716,000	6,762,600	0.7%
P.E.T.	52,242,800	57,325,700	9.7%	2,546,400	2,789,600	9.6%
Aluminum	114,769,100	142,614,700	24.3%	1,862,200	2,341,800	25.8%
2 Piece Steel	144,300	187,500	29.9%	18,900	8,600	-54.5%
Class B Total	197,882,500	235,274,200	18.9%	14,911,800	16,663,500	11.7%
HDPE	3,555,400	2,741,500	-22.9%	73,400	65,400	-10.9%
Other Plastic	2,901,300	3,254,800	12.2%	27,600	29,800	8.0%
Aseptic	37,312,200	37,718,000	1.1%	693,000	668,500	-3.5%
Gable Top	2,450,700	2,068,700	-15.6%	85,700	84,400	-1.5%
Other Steel	3,159,300	2,802,300	-11.3%	335,300	313,000	-6.7%
Others	443,000	361,400	-18.4%	86,600	103,500	19.5%
Class C Total	49,821,900	48,946,800	-1.8%	1,301,500	1,264,700	-2.8%
Total Sales	866,543,300	931,377,600	7.5%	60,567,200	61,864,300	2.1%

Manitoba WRAP Strategy Report (1996)

Table 12: Beverage Container Recovery Levels (1993-1994)

Container Recovery Rates in Manitoba						
Description	Weight Recovered (kg)			Recovery Rate		
	1993	1994	Change	1993	1994	Change
Deposit Refillable	43,712,200	41,417,200	-5.3%	99%	95%	-4%
Deposit Non-Refillable	281,300	381,100	35.5%	74%	111%	37.0%
Class A Total	43,993,500	41,798,300	-5.0%	99%	95%	-4.0%
Glass	633,800	1,243,700	96.2%	17%	25%	8.0%
Liquor Glass	1,426,000	1,594,400	11.8%	21%	23%	2.0%
P.E.T.	626,200	626,600	0.1%	25%	21%	-4.0%
Aluminum	797,300	844,500	5.9%	43%	32%	-11.0%
2 Piece Steel	31,000	23,100	-25.5%	163%	281%	118.0%
Class B Total	3,514,200	4,332,200	23.3%	24%	26%	2.0%

Manitoba WRAP Strategy Report (1996)

According to the State of the Environment Report for Manitoba 1997, it is expected that MPSP will help to divert a significant percentage of the estimated 140,000 tonnes of post-consumer packaging and paper waste annually from Manitoba landfills. The last decade

has seen waste generators in Manitoba (household consumers and industrial producers) assuming increasing roles and responsibilities for the diversion and disposal of wastes that they generate, a practice consistent with the “polluter pays” principle that requires all polluters of the environment to be accountable for its cleanup.

During the rudimentary stages of recycling in Manitoba, recycling initiatives included:

- the processing of 200,000 to 300,000 tonnes of scrap metal every year
- three paper mills consumed small quantities of waste newsprint
- three cellulose fiber insulation manufacturers
- beer vendors use deposit/return aluminum cans and glass bottles
- non-deposit liquor containers were purchased at buy back centres by Manitoba Soft Drink Recycling (MSDR)
- polyethylene terephthalate (PET) plastic beverage containers were shipped to out-of-province processors by Manitoba Soft Drink Recycling

(Manitoba Soft Drink Recycling, 1990)

3.5 Community Support for Recycling

Many organizations continue to support recycling and waste reduction in Manitoba. The Recycling Council of Manitoba, now known as Resource Conservation of Manitoba Inc. (RCM), is an example. RCM is a community-based organization committed to conserving natural resources and maintaining healthy ecological system through the provision of some practical recycling education.

RCM has the policy of promoting ecological sustainability by developing practical alternatives for resource use through conservation and waste reduction geared toward sustainable development. Working with both government and non-government organizations, RCM delivers its mandate through the following instrument programs and services:

1) Info-line:

Operating since 1990, the Info-line (925-3777) is a service to Manitobans who need information support in their efforts to recycle, reduce waste and conserve resources. At one time it was called Recycling Hot Line.

2) Speaker's Bureau: (MPSC funded)

Volunteer speakers are available for schools and community groups to give educational talks on a broad range of topics towards resource conservation.

3) Green-Works for Small Business:

An information package is available to assist small businesses conduct an environmental audit of their operations and to identify waste reduction solutions.

4) R-Report:

This bi-monthly newsletter is an excellent resource for staying in the know about waste management issues in Manitoba.

5) Resource Library:

A library, now combined with the Manitoba-Eco-Network resource library, contains current provincial, national, and international documents and periodicals.

6) Public Forums:

The Council regularly hosts public forums on waste management issues affecting Winnipeg and other municipalities within the province.

7) Don't Bag It - Lawn Care Program:

This project provides information on how to care for your lawn in an environmentally friendly fashion.

8) Composting Education Program:

Using a proactive or hands-on approach, composting technicians deliver practical, user-friendly information to community groups for the setting up and maintenance of back yard composting. This program still exists.

The RCM and regional and municipal community groups help to support recycling and waste reduction activities in the province. These groups volunteer their time and effort for different activities and play a particularly important role in helping to educate young people in alternative resource reduction and waste management activities.

3.6 Recycling Activities and Growth

Since the introduction of the Waste Reduction and Prevention (WRAP) Act in 1990, Manitoba's recycling sector has experienced some growth. Waste management projects in Manitoba, supported by Manitoba's Sustainable Development Fund, continue to grow. In 1994, measurements show the amount of waste generated per person in Manitoba had decreased from 1,000 kg to approximately 790 kg per person per year (Manitoba

Environment 1996). While such evidence suggests progress is being made, additional information is required to properly evaluate the effectiveness of waste reduction efforts in the province, as well as to see if the amount of waste generated is actually decreasing as expected.

Environment Manitoba (1995) reported that recycling services were available in 80% of Manitoba municipalities, but the collection method was mainly drop-off depots.

According to MPSC (2000), more than 90% of the population has access to recycling, and 160 of Manitoba's 202 municipal corporations and another 6 non-municipal communities are officially registered with the MPSP and actively recycling. More curbside and depot collection infrastructures have evolved since the inception of MPSP.

Table 13 shows the average recovery, in kilograms per person, for each of the seven recycling regions of the province.

Table 13: Average Recovery Rate (Kg) per Capita by Regions of the Province.

Region	97-98	98-99	99-00	00-01
North/Northwest	21	23	26	25
Central West	31	30	34	39
South West	24	26	26	32
South Central	34	34	48	49
East	32	40	41	51
Winnipeg Region	42	42	40	45
Interlake	24	35	24	34
Total Average	29.7	32.9	34.8	39.3

MPSC Summary Recycling Report (2001)

Environment Manitoba (1995) reports that, as at June 28, 1994, a total sum of \$618,425 was spent on Regional Waste Management. Between 1991 and 1994, \$363,725 was spent on the Regional Recycling Network in Manitoba. Municipal recycling support payments are directly proportional to the amount of materials communities recycle; and approximately \$4.6 million was paid to registered-participants in the 1998/99 fiscal year (MPSC 1999). Municipal Recycling Support Payments (MRSP) have increased from approximately \$2.0 million in 1995/96 fiscal year to \$5.2 million in the 2000 fiscal year. Table 14 shows a summary of MPSP's municipal support payments between 1995/96 and 2000/01 respective fiscal years.

Table 14. MPSP Manitoba Municipal Recycling Support Payments (1995-2001).

<u>Fiscal year</u>	<u>Tonnes Recycled</u>	<u>Support Payments</u>	<u>Average Payment/Tonne</u>
1995/96	15,559.0	\$2,038,000.00	\$130.99
1996/97	26,748.0	\$3,500,000.00	\$130.85
1997/98	32,610.0	\$4,466,000.00	\$136.95
1998/99	33,609.0	\$4,562,000.00	\$135.74
1999/00	35,452.0	\$4,682,000.00	\$132.07
2000/01	38,827.0	\$5,188,000.00	\$133.62

The City of Winnipeg, which has approximately 58% of Manitoba population, captures approximately 60% of the support payment. (MPSC 1995 to 2001 Annual Reports).

3.6.1 Curbside Collection

As of 1994, 35 communities in Manitoba had access to curbside recycling. These communities represented about 130,000 persons or 13% of the population of Manitoba. In

Winnipeg, six private recycling firms provided curbside service to householders. Approximately 31,000 households or 12% of single and multi-family households, subscribed to privately operated curbside recycling programs. MPCS (1999) reported that, as at the end of its 1999/00 fiscal year, approximately 80 communities had access to curbside program, either through box, bag or hybrid program, an increase of 129% over the 1994 figure.

3.6.2 Depot Drop-off

As of April, 1994, just over 60 communities in Manitoba had drop-off depots for collecting recyclable materials, Winnipeg had five drop-off depots. Winnipeg's city council approved a plan for the construction of one additional depot to serve the city, and since then it has developed a comprehensive recycling program. This initiative is geared towards sustainable development.

At the end of 1999/00 fiscal year, MPCS reported that at least 81 communities have access to drop-off depot programs across Manitoba. The drop-offs take boxes, bags or both. Community-access to these programs has grown from 120 depots in 1994 to 281 in 2000, an increase of 134%. Community participation rate went from 60 communities in 1994 to 81 in 2000, a 35% increase. Most communities currently have both curbside and depot systems unlike 1994 when depots were predominant.

3.7 Funding of Manitoba Recycling Program

Under the original MPSC Municipal Guidebook 1995, in order for municipalities to be eligible for funding, they must collect, as a minimum: newspapers; PET bottles; aluminum; glass; and steel containers. These materials are, in effect, the designated materials under the Interim Measures Regulation. In addition to the above, there are some optional materials that can be collected (Manitoba Government News Release Feb. 16, 1995). These materials include: magazines; catalogues; boxboard; OCC; gable top containers; aseptic packaging; and HDPE containers (MPSP 1998). Materials collected through municipal programs are expected to come only from residential sources. Municipalities are required to operate, or contract for, recycling services, but industrial commercial and institutional wastes are not part of MPSP program structure.

Municipalities outside Winnipeg are eligible for payments of \$152 for every tonne of eligible material recycled. In Winnipeg, support payment for eligible materials collected is set at \$128 per tonne. (Manitoba Environment 1997; MPSP 1998).

Revenue to support the MPSP is derived from a two-cent levy on all non-deposit, nondairy beverage containers. As described earlier, the WRAP levy generates more than \$5 million annually to be invested in waste reduction and recycling effort initiatives (Holmes, G. 1999; MPSP, 1998).

Under the MPSP program, recycling programs are set up, managed, and maintained by local governments, such as municipalities and townships. Participation in these programs is voluntary, and those municipalities currently in the program are not compelled to remain in it. The costs associated with the local collection and management of the materials removed from the residential waste stream are shared between municipalities and the MPSC. Through the Multi-Material WRAP Fund, the original plan was that MPSP provide funding to cover approximately 80% of the costs incurred by municipalities with the remaining 20% being the responsibility of the respective participating municipalities (MPSC, 1997). MPSP currently pays a flat support of \$152.00 for every tonne of collected recyclable outside of Winnipeg; Winnipeg receives \$128.00.

The funds delivered by the MPSC to local programs are withdrawn from the Multi-Material WRAP Fund which is administered by the MPSC. The current levy of two cents per beverage container is placed on nearly all beverage containers at a flat rate across Manitoba. The approximately 90 registered distributors through the program remit levy fees to the MPSC on a monthly or quarterly basis. No take-back obligations are required of the distributors or retailers in the province. Rather, the municipal recycling programs are the means of container and material collection.

Due to the discretion given to distributors to absorb the levy themselves or collect it from others, the levy has not been instituted in the same manner across the province. Most

retailers have allowed the two-cent levy to be transferred directly to the consumer at the check-out counter while others appear to be including it in the price on the store shelf. Manitoba Product Stewardship Corporation collects the levies through manufacturers' environmental taxes, manages the levy funds, and distributes the collected funds to eligible local programs to reimburse them up to the 80% of the costs that are incurred at their levels. Measures are taken by the MPSC to ensure compliance with the program. These measures include routine checks of retail outlets and ensuring all eligible non-refillable containers are registered for the application of the levy. Municipalities also must account for their costs and the amounts of materials collected in order to remain eligible for program funding (MPSC, 1997).

Every three years, the MPSC publishes and releases 3-year business plans that contain its program activities. The second publication of such a plan that has been released by MPSC covers the period from 1998 to 2001. This new business plan identifies four options for raising future levies: all materials; printed paper products; more beverage containers; and printed paper and short-life products. The Board will pursue the last of these for further investigation (MPSP, 1997).

3.8 Promotion and Education Approach to Recycling in Manitoba.

MPSC (1998) indicates that promotion and education surrounding waste reduction and recycling is another facet of the MPSP. These programs became more active in 1998 when approximately \$1 million was spent to promote the MPSP to schools and the public

(MPSC 1998). This amount was a 90% increase over the previous year's spending. The campaigns have been directed at both the general public and specific groups of school age children. The STAR (Student Action on Recycling) Program continues to expand recycling in the province by providing \$500 honoraria towards recycling program initiatives to more than 300 schools (MPSP, 1997).

Other initiatives include providing ongoing support to schools and other institutions for their recycling programs. While the MPSC has targeted recycling awareness as the main theme in its advertising in the initial three year business plan, the target is now expanding to include the concept of 2R's (reduction and re-use) awareness and also on capturing specific materials in recycling programs.

The "Use Less/Live More" billboard campaign is being well received by Manitobans (MPSC 1999). Billboards, print and television media advertisements, as well as other mechanisms, are being utilized to attempt to broaden the public awareness of the MPSP and its goals.

Over the summer of 1998, MPSC overhauled its Virtual Recycling educational website with new features being added. The STAR School database was placed on-line to enable interested schools to look up any STAR school in Manitoba, research what type of recycling it has, obtain contact information, as well as communicate directly on-line.

MPSC provides a direct one-on-one technical support to community recycling program administrators and operators. Upon request, MPSC's technical support team will conduct a detailed analysis of all aspects of a community's local recycling program. Communities will be shown the factors affecting their costs as well as opportunities for reducing costs and increasing recovery.

3.9 Chapter Summary

Following the recommendations of the World Commission on Environment and Development (WCED, 1987), Manitoba has adopted numerous initiatives towards sustainable development. In response to WCED's recommendations, and through the Waste Reduction and Prevention (WRAP) Act, the Province of Manitoba instituted waste management activities that have been centered on three goals targeting resource conservation and sustainable development (SD) in the province. These goals include:

- Reducing the volume of waste generated
- Separating hazardous from non-hazardous waste
- Improving the status of waste disposal and recycling facilities in the province.

Under the WRAP Act, and with regard to reducing the volume of waste generated, the province of Manitoba created the Manitoba Product Stewardship Corporation in 1995 to administer MPSP. The objectives of the MPSP program are to:

- maximize reduction, reuse, recycling of designated materials

- hold distributors of products and materials with the potential to become waste in Manitoba responsible for a share of the costs of managing those wastes
- incorporate the costs of waste management into the product price
- and to provide stable, long term funding to support municipal recycling in Manitoba.

This chapter has attempted to reveal that recycling is one of the major tools for facilitating the above objectives across Manitoba and for helping to achieve the WCED goals. Chapter 4 presents data and analysis, as well as some net changes in residential solid waste recycling in four sample communities of the South-central Recycling Region of Manitoba, the study region.

CHAPTER 4

Recycling in Four South-central Manitoba Communities

4.0) Overview

The previous chapter establishes the important impact that the MPSP program has had on recycling in the province. This coarse data does not, however, reveal the types of changes the program has facilitated in individual communities, many of which had recycling prior to MPSP. The purpose of this chapter is to present the findings of detailed case studies of rural recycling programs in the South-central Recycling Region of Manitoba in order to assess the net change in recycling activities for the period 1994 to 2000 in the region.

The case study communities include the City of Portage la Prairie (population 13,200, representing rural communities of population greater than 10,000); the Town of Winkler (population 6400, representing rural communities of population between 5,000 and 10,000); the Rural Municipalities of Grey (population 2,104, representing rural communities of population between 2,000 and 3,000); and Roland (population 968, representing rural communities of population less than 1000).

These communities were chosen because the City of Portage la Prairie had no recycling program before MPSP, but the Town of Winkler, RM of Grey and RM of Roland had their programs established before the inception of MPSP. These four communities would, therefore, help in estimating the impact of MPSP on existing programs. Furthermore, these communities represent a diverse range of population distribution and are typical of

rural communities of Manitoba. This population distribution may help reveal any relationship between population size and per capita net change in recycling in the study region.

Information on each of the case study communities was collected for pre- and post-MPSP for the following areas:

- 1) Waste generation and diversion rates by each municipality
- 2) Recyclable materials accepted, collected and processed
- 3) Type of recycling activities/infrastructure
- 4) Operating costs, revenues and other sources of funds
- 5) Promotion and education activities and methodologies
- 6) Other Waste Reduction Activities
- 7) Remarks on Net Changes by Community

4.1.0) City of Portage la Prairie (CPLP)

The City of Portage la Prairie, with a population of 13,186, represents rural Manitoba communities having population greater than 10,000. It is the only community of this size in the South-central Recycling Region of Manitoba. In an attempt to meet the Government of Manitoba goal of 50% municipal waste diversion from landfill, in 1994, the City of Portage la Prairie started its public consultation on how to minimize waste. One of the outcomes of the public consultation is that the city began its voluntary

curbside collection of recyclable materials on August 01, 1995 (Waste Matters, Portage la Prairie 2000).

As the record shows, the City of Portage la Prairie (CPLP) had no recycling activities until the establishment of MPSC in May 1995, and since then, has carried out varying recycling activities. Portage La Prairie joined MPSP in 1995. Initially, recycling was contracted out to a non-profit organization, and, on many occasions, volunteers participated in a variety of activities such as providing speeches and education, as well as the distribution of printed materials on recycling at community events.

Since joining the MPSP, the City has increased its recycling activities, and the use of volunteer services has dropped. The City now has a contract with Portage and Districts Recycling Inc. (PDRI) for operation of a municipal recycling program. Education has been integrated with the school curriculum.

4.1.1 Waste Generation and Diversion Rates in Portage la Prairie.

Tables 15 shows that recycled waste has steadily increased over the life of the program, but the amount of waste collected decreased during 1998 and 1999 but increased in year 2000. These figures are evidence of successful recycling program in this community and a positive net change.

Table 15: City of Portage: Waste Generation and Recycling Rates (Tonnes).

Year	Generated	Recycled	%	Yard Waste	Trees
1994	-	-	-	-	-
1995	2,635.7	52.6	2.0%	-	-
1996	2,509.9	299.8	11.9%	382	185
1997	2,651.1	352.8	13.3%	431	323
1998	2,105.0	388.1	18.4%	432	322
1999	2,069.5	669.3	32.3%	432	323
2000	2,313.7	913.3	39.5%	432	337

The City of Portage la Prairie, Waste Management Program Report, April 2002; Kelly Braden April 27, 2000.

Note: These figures do not match MPSP figures due to the fact that MPSP reports are based on the fiscal year (April to March) while the City of Portage la Prairie's are based on the calendar year (January to December).

Table 16 supports the fact that paper materials (fiber) is the most abundant material in the residential solid waste stream in the City of Portage la Prairie and that the collection of eligible materials continues to increase. The higher percentage of paper materials is attributed to newsprint and waste papers from schools and businesses.

Table 16: City of Portage: Kilograms of Recycled Materials by Material

Year	Nsprint & Flyers	Old Magaz	Phone Books	Box Board	G Top Carton	Asept Cans	Steel Cans	Alumni-um Cans	PET(#1) Plastic	HDPE Plastic	Glass Jars	OCC Board	Annual Total
1994	-	-	-	-	-	-	-	-	-	-	-	-	-
1995	42000	4000	-	6600	-	-	-	-	-	-	-	-	52600
1996	156415	27603	-	41831	13095	-	21301	7490	14630	-	37777	-	320,141
1997	186415	27603	-	26407	12533	-	22011	6950	13910	-	39044	-	334873
1998	216,366	34,157	4,629	26,122	8,791	-	21,310	3,809	10,859	4,551	40,453	11,751	382,797
1999	394,168	52,378	280	40,806	7,588	645	26,470	11,310	17,195	17,584	64,736	41,859	675,018
2000	407117	76,740	7,841	69,665	19080	0	49,295	21,779	20,961	33,954	91395	141,132	928959

MPSP, Municipal Annual Record Reports.

Study on residential waste generation and recycling rates conducted by Earthbound Environmental Inc. and commissioned by MPSC revealed that per capita rates on waste generated and amount recycled fluctuate from year to year. Waste generated per capita in 1996 was 67 kg. This amount dropped to 54 kg in 1998 and went back up to 76 in 2000. Recycled component was 34 kg per capita in 1996, down to 28 kg in 1998 and back up to 46 kg in 2000. This fluctuation could be a dictation of the economy and consumer behavior.

4.1.2 Types of Recycling Activities and Infrastructure.

The City of Portage la Prairie has depot, curbside collection, and composting programs. Curbside collection is designed to serve the urban communities and the depot serves the more rural component of the city. Depots are open 24 hours a day, seven days a week for drop off. Portage la Prairie has a 5-day cycle for the pick up of non-recycling garbage, and a 10-day cycle for recycling materials. Curbside pickup occurs Monday to Friday, between 7:00 a.m. and 4:30 p.m., and moves one day ahead following statutory holidays.

As an effort to reduce waste generation, CPLP implemented a partial user-pay "pay per bag" of non-recyclable disposal waste system in August, 1995, for curbside pickup and other waste materials for all residents. The partial user-pay system allows customers a two-bag or can limit on the amount of solid waste that will be picked up from curbside and \$0.75 for any additional bag/can. CPLP allows up to four green boxes per home with one free box and a \$5.00 deposit required for additional boxes. Multi-family dwellings

(MFD) are allowed 5 cubic metres of garbage per unit per year and are charged if they go over this limit. MFDs greater than 5 units receive toter-bins (two-wheeler recycling waste containers) for three waste streams (glass, aluminum and papers). Yard waste collection was carried out seven weeks per year but increased to 8 weeks per year in 1999 for all residents.

The City of Portage la Prairie has a contract with Portage and Districts Recycling Inc (PDRI), an independent agency, for operation of a municipal recycling program. PDRI currently has six fulltime employees who are involved with the collection, sorting, bailing and shipping of collected materials. The PDRI processing facility is pictured below.

Plate 1: Portage & Districts Recycling Inc. Facilities & Materials.

P&DR Inc site



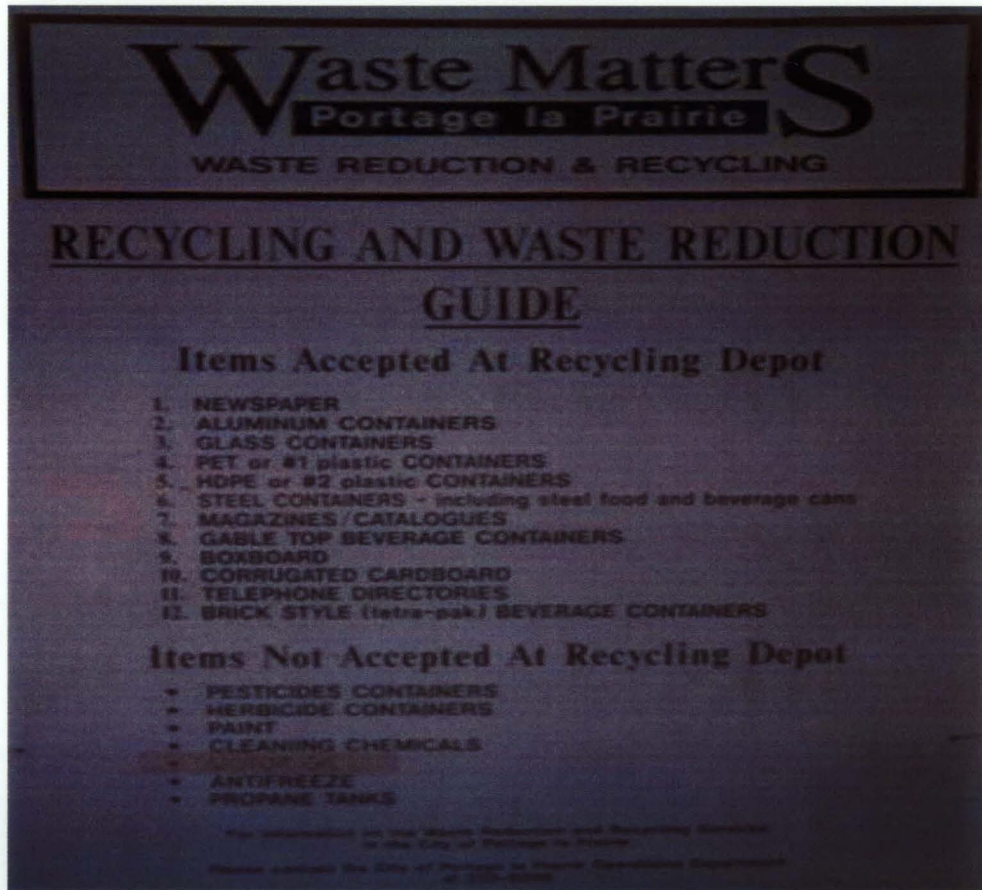
(Okwumabua, N. 2002)

Portage la Prairie Depot



(Okwumabua, N. 2002)

Portage & District Recycling Inc. List of recyclable materials



(Okwumabua, N. 2002)

Staff at work: Raw recyclables from curb side being prepared for sorting



(Okwumabua, N. 2002)

Staff at work: Raw recyclables from curbside being prepared for sorting



(Okwumabua, N. 2002)

Staff at work: Raw recyclables from curbside being prepared for sorting



(Okwumabua, N. 2002)

Sorted recyclables ready for crushing and bailing



(Okwumabua, N. 2002)

Horizontal Crusher/bailer: Crushing and bailing sorted materials



(Okwumabua, N.2002)

Vertical Crusher/bailer: Crushing and bailing sorted materials



(Okwumabua, N. 2002)

Staff at work: Emptying ground glass being prepared for shipment



(Okwumabua, N. 2002)

Old newsprint and magazines bailed for shipping



(Okwumabua, N. 2002)

OCC ready for the market



(Okwumabua, N. 2002)

Ready for Market:
Steel Cans,

Plastics and **Aluminum**



(Okwumabua, N. 2002)

4.1.3) Operating Costs, Revenue and Other Sources of Funding.

The City of Portage la Prairie receives \$152.00 funding from MPSP for every tonne of recyclable waste collected, and the City is expected to make up any operating fund deficit through fundraising activities, other government and non-government interest groups grants, and revenues from finished-product sales.

Factors that help Portage la Prairie achieve and enhance effective waste management include increasing tipping fees by \$1.00 per cubic yard per year from 1995 to 1999. This increase provided additional revenue for landfill operation, thereby freeing-up some tax revenue for other programs (Kelly Braden, 2000). Table 17 shows operating costs, revenue and other sources of funds, and reveals that net cost per tonne of recycling is inversely proportional to quantity recycled.

Table 17: City of Portage la Prairie: Estimation of Costs and Revenues.

Year	Tonnes ** Recycled	Collect & Process \$s	Admin \$s	Promo & Educa \$s	Total Cost	Tot Rev (MPSP)	Cost per tonne
1992	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-
1996	320.1	35,345	18,280	2,684	56,309	48,661	\$176
1997	334.9	43,523	3,384	5,036	51,943	50,904	\$155
1998	484.4	60,449	4,971	3,385	68,805	73,624	\$142
1999	768.7	67,935	6,804	5,559	80,298	116,843	\$104
2000	969.5	95,745	3,770	2,883	102,390	147,360	\$105

City of Portage la Prairie Dept of Public Works, Annual Reports; MPSP municipal records.

Note: ** Tonnes adjusted for late reports, claims and allowable 5% residue.

Some concerns were expressed with respect to the distribution of revenues from finished products. During the 1997 survey conducted by MPSC, one concern expressed by one of the recycling operators is that municipalities run their recycling programs but receive no revenues from recycled products. This operator alleges that the processor of the collected recyclables receives all the revenue while the City of Portage la Prairie receives all MPSP funding but pays nothing for processing. The operator further alleges that this condition has the potential of impeding program participation rate.

4.1.4 Portage la Prairie: Promotion and Education.

Education is the cornerstone of any successful initiative, including recycling. Promotion and education programs on recycling are delivered to the public and schools by the City of Portage la Prairie. MPSC provides some assistance, guidance, and materials for this exercise in addition to those that had been provided by the city before and after the inception of MPSP. One concern, expressed by a recycling operator in this community, was the lack of space in the city's daily paper for more articles on recycling.

Promotion and education are facilitated through printed materials, newspaper advertisements, and radio and television. Printed materials are delivered to households on a monthly basis, and newspaper ads are provided in the city's daily newspaper. Printed materials are also handed out in public places and during city social events where recycled articles are also displayed. Billboards are also utilized within the city and neighboring highways. Schools have been found to be a powerful venue for recycling

promotion and education in the City of Portage La Prairie. Schools receive \$500.00 per year for any type of recycling activities (MPSP STAR program).

In addition to the flyers provided to RMs by MPSC, the City of Portage la Prairie has published an eight page information guide entitled "Recycling and Waste Reduction Guide." This pamphlet outlines all recycling initiatives within the city including collection days, solid waste collection tags, ways to handle recyclable materials, collection sites, Green Box Program, and a reusable /recyclable item directory.

MPSP has provided Portage la Prairie with an information sticker "Recycle → It's Worth It!" that is made available and distributed to the community residents. The sticker, most often placed on the fridge door, lists all recyclable materials and provides the telephone number for the City's Operation Department for general recycling inquiries. Another popular mailer/sticker available through MPSP is the "If You Not Recycling, You're Throwing It All Away." These mailers and stickers also come in billboard sizes for community and highway display.

4.1.5 Other Waste Reduction Activities

Composting of yard waste has become a popular recycling activity in the City of Portage La Prairie. The City uses the windrow composting method and a front-end loader to turn the compost. Composted material is ready for reuse, as soil, in three years. Composted yard-waste is processed by screening or by a combination of grinding and screening. Even

though the processes were identified to be relatively expensive, the City's Director of Operations, Kelly Braden, in his April 2000 presentation report, asserted that composting has yielded excellent results and is well received in the community.

Table 18: City of Portage la Prairie: Waste Compost Rates (Tonnes).

Year	Yard Waste Composted	Trees composted
1994	-	-
1995	-	-
1996	382	185
1997	431	323
1998	432	322
1999	432	323
2000	432	337

The City of Portage la Prairie, Waste Management Program Report, April 2002; Kelly Braden April 27, 2000.

4.1.6 Remarks on Net Change (City of Portage La Prairie)

Prior to the inception of MPSP in 1995, the City of Portage la Prairie had no recycling program. According to Ray Rose, the City's Manager of Public Works, all the sole recycling program available was the collection and chipping of Christmas trees after Christmas.

Since 1995, recycling has become popular, and recycled materials in the City of Portage La Prairie have increased from 52.6 tonnes in 1995 to 299.8 tonnes in 1996 and to 913.3 tonnes in 2000, for a net increase of 204.6% since 1996. The tremendous increase can be largely attributed to the introduction of a user-pay program for the collection and disposal of non-recyclable waste. The program would not have been possible without recycling

opportunities that are directly linked to the advance of funding support from the MPSP. The fee is inversely proportional to the amount of waste going to landfills in the sense that consumers would rather spend their dollars on better commodities than paying a fine (the user-pay fee) for not recycling.

Per capita rates on waste generated and amount recycled fluctuate from year to year. For example, waste generated per capita went from 67 kg in 1996 to 54 kg in 1998 and back up to 76 in 2000 while recycled component went down from 34 kg per capita in 1996 to 28 kg in 1998 and back up to 46 kg in 2000. This fluctuation is attributable to the economy, the recycled product market and consumer behavior.

Portage la Prairie also continues to increase its list of accepted recyclable materials. This list has increased from 8 in 1995 to 12 in 2000. The city also continues to find better ways of promoting its program and providing more education and awareness to its population through schools and public speaking.

Chairperson of the City of Portage la Prairie Transportation Committee, in charge of the city's recycling, Councilor Brian Tenzsen, reported a 250 tonne drop in landfill use as a result of people in Portage la Prairie increasing their recycling (Portage La Prairie Daily Graphic, Feb. 22, 2000). The Town of Treherne now brings its eligible recycling materials to the City of Portage la Prairie, an effort towards networking.

In conclusion, this study has demonstrated that Residential Solid Waste Recycling has experienced an enormous positive net-change in the City of Portage la Prairie since the inception of the Manitoba Product Stewardship Program in 1995. It is a somewhat special case, however, since Portage la Prairie had no recycling program prior to the MPSP support being introduced.

4.2.0 Town of Winkler Overview

The Town of Winkler (population of 7,241) represents one of the two rural South-central Manitoba communities with the population of 5,000 to 10,000. For the past 10 years, recycling has been an everyday household word in this community. Valley Rehab Centre in Winkler has been collecting varying types of recyclable materials for the Town of Winkler and 17 other communities in the region since 1992. Collected materials have been put to other uses and something new made from them. For example, collected newspapers and magazines were, and are still being, shredded and used for insulation in buildings.

In 1990, eight municipalities teamed up to form the Pembina Valley Recycling Network (PVRN) which became the first recycling network in Manitoba. When formed, the Pembina Valley Recycling Network chose Valley Rehab (VH) as its processing centre. The Valley Rehab's workload expanded to include newsprint, cardboard, aluminum, steel and plastic pop bottles. During this same year, the Town of Winkler teamed up with Valley Rehab to provide curbside recycling services to residents and businesses across the town. For many years, well before the inception of MPSP in 1995, the Town of Winkler saw varying recycling activities. The following describes these activities and how they have evolved, including those since the inception of MPSP.

4.2.1 Waste Generation and Diversion Rates in Winkler.

Table 19 shows that recycling in the Town of Winkler started as early as 1992 and that the amount of recycled materials has been increasing over the years. Data were not available for total waste tonnage generated between 1992 and 1995. According to the Towns' Director of Public Works and Operations, Bill Zacharias (Bill), the reason for lack of those years' data was lack of adequate measuring equipment. Bill added that the availability of funds from MPSP has made it possible for his community to divert some previous waste recycling dollars to other use, such as the purchase of such equipment.

Table 19: Town of Winkler: Waste Generated and Recycled (tonnes).

Year	Generated	Recycled	%	Yard Waste
1992		56.7		153
1993		211.4		412
1994		293.7		475
1995		187.0		517
1996	1,285.8	215.6	17%	444
1997	1,285.8	219.3	17%	447
1998	1,106.7	298.5	27%	1121
1999	1,106.7	291.1	26%	696
2000	1,445.7	329.5	23%	601

Note: Yard Waste is curbside collection and does not include self-haul to depot.

Note: These figures do not match MPSP figures due to the fact that MPSP reports are based on the fiscal year (April to March) while the Town of Winkler's are based on the calendar year (January to December).

Table 20 further illustrates that, before MPSP, the Town of Winkler's recycling program was already accepting all recyclables currently in MPSP's list. Even before MPSP added OCC as an accepted material in 1997, the Town of Winkler was already accepting it.

Table 20 also shows that all collected materials have continued to increase in quantity pre- and post-MPSP at a steady rate.

Table 20: Town of Winkler: Tonnes of Recycled materials.

Year	Old Newsprt & Flyers	Steel Cans	Aluminum Cans	PET(#1) Plastic	Glass Jars	OCC	Annual Total	Percent Increase
1992	39.0	7.56	1.02	2.47	6.6	0	57	
1993	61.2	12.42	1.93	3.58	9.33	123	211	270
1994	67.6	8.93	3.13	5.73	12.11	196.3	294	39
1995	119.6	9.48	5.03	11.52	24.63	17	187	-36
1996	145.4	4.16	6.21	15.34	24.9	19.6	215.6	15
1997	163.7	4.07	6.76	16.03	21.59	7.13	219.3	2
1998	221.5	8.36	8.89	10.39	30.92	18.37	298.5	36
1999	212.2	8.81	7.68	9.69	33.69	18.8	291.1	2
2000	213.0	8.90	7.62	9.36	24.7	65.9	329.5	13

Waste & Recycling Services, Town of Winkler 2000 Executive Summary Sec. E

4.2.2 Types of Recycling Activities and Infrastructure.

The Town of Winkler has both curbside and depot collection programs that have not changed since the advent of MPSP. Depot sites are open 24 hours a day, seven days a week, and curbside collection is done every other week after 7:30 a.m. The town's blue box program was established in 1992.

Plate 2: Town of Winkler: Gateway Resources Recycling Infrastructure.

Community Depot in Gateway Resources



Okwumabua, N. 2002

Labeled Containers for Drop-off.



Okwumabua, N. 2002

Sorted materials ready for compacting & bailing.



Okwumabua, N. 2002

Conveyor-type compacting & baling equipment.



Okwumabua, N. 2002

Upright shredder & bailer.



Bailed paper materials for shipping.



Okwumabua, N. 2002

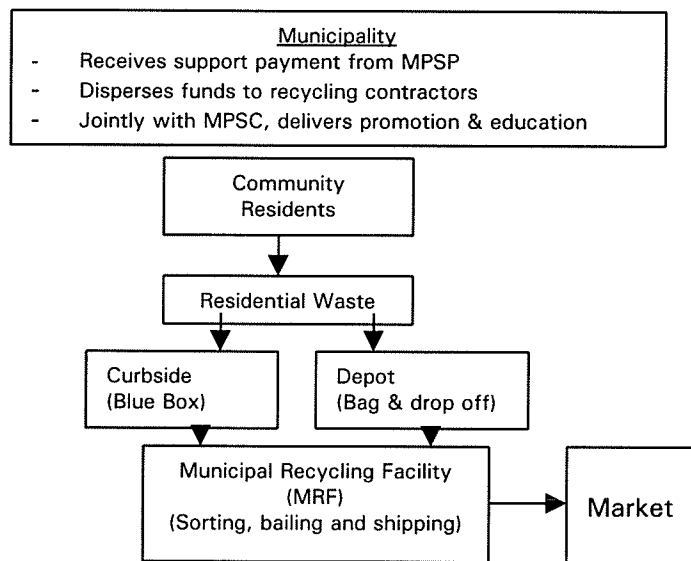
The Town of Winkler uses the clean-sort process for sorting collected material. Clean-sorting is a process whereby materials are separated by hand, and loaded into bailers for compacting and bailing. Sorting facilities are located in the Gateway Resources Centre (formerly Valley Rehabilitation Centre) in Winkler. Sorting is done by mentally challenged individuals who are under the Manitoba Child and Family Services Social Assistance Program. Sorters also receive a token wage for their efforts.

Old newsprint is bailed and shipped to Pine Falls Tembec Industries. Tembec Industries pays shipment costs and an additional \$75.00 per metric tonne to Gateway Resources for old newsprint. Old corrugated cardboard used to be shipped to Gateway Parkers in

Winnipeg, but it is currently shipped to Smurfit-Stone in Thunder Bay where Gateway Resources has found a better price for its material. Smurfit-Stone pays for shipment of the OCC as well as paying an additional \$40.00 (U.S.) per short ton.

Western Scrap, a local business, receives other materials, but Gateway pays for shipment and receives \$0.55 to \$0.60 per pound or \$1,100.00 per short ton for aluminum and \$35.00 per short ton for tin cans. For the safety of mentally challenged employees, Gateway Resources does not accept glass. Glass is shipped to a local business and used locally for pavements and other structures.

Fig 4: Town of Winkler: Recyclable Material Flow.



(Okwumabua, N. 2000).

During an interview conducted by MPSP, the Town of Winkler's recycling coordinator expressed the desire to acquire trucks and other equipment suitable for collecting recyclables for communities under 10,000 population.

4.2.3 Operating Costs, Revenue and Other Sources of Funding.

The Town of Winkler receives \$152.00 from the Province of Manitoba through MPSP for every tonne of recyclable waste collected. The said recyclables must fall under MPSP's acceptable materials. Other grants for its operation come from other government and NGO interest groups. Other income is derived from revenue from sales of recycled products.

Table 21 shows statistics of annual operating costs, revenues; and estimated net cost per recycled tonne. Estimates show that net cost per recycled tonne has stayed proportional to the quantity recycled over the years.

Table 21: Town of Winkler - Estimation of Cost per Tonne.

Year	Tonne/Yr.	Collect & Process \$s	Admin \$s	Promo & Educa \$s	Tot. Cost	Tot Rev (MPSP)	Cost per tonne
1992	56.7	-	-	-	-	-	-
1993	211.4	10401	1520	4802	16723	-	\$79
1994	293.7	10877	1717	6300	18894	-	\$64
1995	380.4	10853	2800	17147	30800	-	\$81
1996	283.1	16245	3191	15670	35106	43,028.16	\$124
1997	299.1	32392	4339	11000	47731	45,457.42	\$159
1998	286.0	26266	3376	7500	37142	43,475.50	\$130
1999	299.9	25094	3200	6903	35197	45,583.44	\$117
2000	377.9	32756	3474	1985	38215	50,661.75	\$101

Town of Winkler 2000 Executive Summary; MPSC recycling Reports 1995 - 2001

Note: ** Tonnes adjusted for late reports, claims and allowable 5% residue.

4.2.4 Promotion and Education:

Education and promotion are critical aspects of recycling in the town of Winkler.

Promotion and education programs on recycling are delivered to the public and schools by the municipality. MPSC provides some assistance, guidance, and materials for this exercise in addition to that provided by the municipality and the town.

Promotion and education are facilitated through printed materials, newspaper advertisement, and radio and television. Printed materials are delivered to households on a monthly basis, and newspaper ads and reports on recycling are often provided in the town's daily newspaper. Printed materials are also handed out in public places and during city social events where recycled articles are also displayed. Billboards are also displayed

within the town and neighboring highways. Schools have been found to be powerful venue for recycling promotion and education in the Town of Winkler where recycling has been added to the school curriculum.

The Town of Winkler publishes and distributes an information handbook and flyers on recycling, and it also distributes to its residents, an eight-by-four mailer "Recycle -> It's Worth It!" prepared by MPSP. The handbook, flyers and mailer outline all recycling initiatives within the town including collection days, the availability of free recycling bags and how to obtain them, ways to handle recyclable materials, depot sites, the Green Box Program, and a reusable /recyclable item directory.

In addition to the town's efforts, MPSP has provided the Town of Winkler with an information sticker, "Recycle → It's Worth It!" for distribution. The sticker, most often placed on a fridge door, lists all recyclable materials and provides the telephone number for the town's Operation Department for general recycling inquiries. Another popular mailer/sticker available through MPSP is the "If You Not Recycling, You're Throwing It All Away." These mailers and stickers also come in billboard sizes for highways and community display.

4.2.5 Other Waste Reduction Activities

Composting has been an active waste reduction activity in communities and has been popular in the Town of Winkler since 1992. Composted yard waste is processed by screening or by a combination of grinding and screening. Table 22 represents the summary of composting between 1992 and 2000 in the Town of Winkler.

Table 22: Town of Winkler: Waste Composting (1992 to 2000)

Year	Tonne / Yr.		Year	Tonne / Yr.
1992	153		1997	447
1993	412		1998	1,121
1994	475		1999	696
1995	517		2000	601
1996	444			

Town of Winkler 2000 Executive Summary

The Town of Winkler has a contract with C.W. Sanitation for municipal waste and compost collection. This contract was recently renegotiated to April 2003 with a 2% annual increase. Bill Zacharias, Director of Works and Operations, rated C. W. Sanitation's performance for the year 2000 as excellent.

4.2.6 Remarks on Net Change (Town of Winkler)

The Town of Winkler's recycling program was in full operation three years before the inception of MPSP. Some improvements to the recycling program leading to better record keeping, program promotion and education have been achieved following the inception of

MPSP in 1995, but the numbers in Tables 19 and 20 indicate only minimal improvement in the town's recyclables since MPSP.

Recycling has been quite active in this community, leading to a minimal reduction in the pressure on landfills. Between 1997 and 2000 inclusive, net waste to landfill has dropped from 16,927 to 13,227 metric tonnes, a 22% reduction of waste as well as a 22% extension of the landfills' life. It is possible this change could have occurred without MPSP support because the quantity of recycled materials continues to increase at almost the same rate post-MPSP as pre-MPSP. Recycling experienced a noticeable increase in Winkler's programs before the inception of MPSP and an occasional decrease after its inception; therefore, it is difficult to attribute the success to MPSP or the Town of Winkler for the activities between 1995 and 2000.

Before MPSP, the Town of Winkler's recycling program was already accepting all recyclables currently on the MPSP's list. Even before MPSP added OCC as an accepted material in 1997, the Town of Winkler was already accepting it. Furthermore, even before MPSP, all collected materials had continued to increase in quantity over the years. Therefore the main positive impact of MPSP on Winkler's recycling program is centered on better program promotion and education, as well as providing an added stable source of funds.

Since 1998, MPSP has established a maximum allowable limit (cap) for OCC that will be eligible for support payment under the residential solid waste recycling program. The maximum is set at 10% of the total weight of other MPSP materials reported during the period. The argument supporting the cap is that most OCC is industrially based.

The Town of Winkler has the fullest list of accepted recyclable materials in the province, even before MPSP, and continues to find better ways of promoting its program and providing more education and awareness to its population.

In conclusion, this study has demonstrated that Residential Solid Waste Recycling Program in the Town of Winkler has benefited from MPSP, principally within education and promotion, as well as funding. It should be noted, though, that the Town's recycling program was already well established before MPSP. Therefore, it becomes unclear what the additional funds from MPSP actually added to the Town's waste reduction program. Arguably, the Town uses the grant money from MPSP for improvement and expansion of its existing programs in different ways, such as the purchase of adequate waste management and recycling equipment like scales for weighing amount of waste generated. Data were not available for waste generated until 1997.

4.3.0 R.M. of Roland Overview

The R.M. of Roland, with a population of 984, represents those rural Manitoba communities with the population of less than 1,000, of which there are three in the South-central Region of Manitoba. The R.M. of Roland started its recycling program before 1994 and registered with MPSP in February, 1995. Between 1994 and 2000, in an attempt to meet the Government of Manitoba's goal of 50% municipal waste diversion from landfill, the R.M. of Roland instituted a number of activities.

In 1994, the R.M. of Roland held a special public consultation on how to meet the Government's waste minimization goal. Two of the outcomes of the public consultation were the municipality is strengthening its collection of recyclable materials and taking advantage of opportunities available from MPSP.

Initially, recycling activities were done by residents and on a voluntary basis. The collection and processing of the materials were contracted out to a private organization after the inception of MPSP. Volunteers participated in a variety of activities, such as providing speeches and education, as well as distribution of printed materials on recycling in community events. Since joining the MPSP in 1994, the R.M. of Roland has increased its recycling activities.

4.3.1 R.M. of Roland: Waste Generation and Diversion Rates.

Table 23 shows that recycling was available in the R.M. of Roland before MPSP. It further reveals that diverted materials moderately increased every year, but data for amount of waste generated is still not available in this community.

Table 23: R.M. of Roland: Waste Generation Rates in tonnes.

Year	Waste Generated	Diverted	%	-	Year	Waste Generated	Diverted	%
1992		1.0		-	1997	219.7	18.7	9%
1993		11.4		-	1998	200.4	19.5	10%
1994		17.4		-	1999	200.4	28.9	14%
1995		18.4		-	2000	162.6	20.6	13%
1996	219.7	18.7	9%	-				

Community Annual Recycling Reports

Even though RM of Roland started its recycling program as early as 1992, it has never kept records of the quantity of waste generated. Therefore, the percentage of diversion has been calculated using MPSC's commissioned waste generation rates.

Table 24 reports that newspaper is the major material for this community and that the community continues to add to its collectable material list. Year 1999 is this community's best year for recycling with respect to the number and amounts of materials collected. These changes are attributable to MPSP funding that led to a better recyclable materials collection contract.

Table 24: R.M. of Roland: Tonnes of Recycled Materials.

Year	Newsprt & Flyers	Maga zine	Box Brd	Gabletop Cartons	Asepti Cans	Steel Cans	Alumin- ium Cans	PET(#1) Plastic	HDPE Plastic	Glass Jars	OCC	Total
1992	1.0											1.0
1993	11.4											11.4
1994	13.6					1.5	1.2	1.1				17.4
1995	12.7					1.9	1.8	1.0				18.4
1996	14.6					2.0		1.9				18.7
1997	16.2							1.5				18.7
1998	14.1	2.1			0.9	1.5	.1	.8				19.5
1999	15.7	3.0		1.2	1.2	2.0	0.2	.5	.6		4.5	28.9
2000	7.2	4.2		1.3	1.3		0.2	0.7	0.9		4.7	20.6

R.M. of Roland - Community Annual Recycling Reports.

4.3.2 Types of Recycling Activities and Infrastructure.

The R.M. curbside and depot recycling programs were in place before MPSP. The depot, which is located on 50 - 3rd street in Roland, is open 24 hours a day, seven days a week. Curbside collection is a once-a-week event, carried out every Tuesday; and all recyclables are expected to be properly bagged and placed on the curbside before 1:00 p.m. of the pickup day. Rural residents are reminded by radio, printed mailers and through community events of pick-up and dropoff times, as well as the proper ways to handle recyclable materials. Materials are collected and transported to Gateway Resources in the Town of Winkler where they are sorted, bailed and shipped to market.

Plate 3: R.M. of Roland: Recycling Depot in the town of Roland



(Okwumabua, N. 2002)

The curbside program is intended for the more urban community while the depot is set up for those in the more rural areas. Curbside participation is estimated at 130 single homes, and 195 households use the depot. The Municipality supplies free plastic bags for recycling, and the bags are available for pick-up at any local business or at the R.M. office.

4.3.3 Operating Costs, Revenue and Other Sources of Funding.

The R.M. of Roland receives \$152.00 from MPSP for every tonne of recyclable residential solid waste material collected and is expected to generate any recycling fund deficit from its fundraising activities, other government and non-government interest groups grants, and from its finished-product sales.

Table 25: R.M. of Roland - Estimation of Cost per Tonne.

Year	Tonne Per Yr.	Collect & Process \$s	Admin \$s	Promo & Educa \$s	Tot. Cost	Tot Rev (MPSP)	Cost per tonne
1992	1.0						
1993	11.4						
1994	17.4				2,625.13		
1995	18.4				3,032.87	\$2,796	\$165
1996	18.7				2,757.78	\$2,842	\$147
1997	18.7				2,266.17	\$2,842	\$121
1998	19.5				2,624.36	\$2,962	\$135
1999	28.9				2,564.17	\$4,392	\$89
2000	20.6				2,333.13	\$3,123	\$113

R.M. of Roland Waste Collection & Recycling Annual Reports.

Empty cells in the table are due to the fact that the R.M. of Roland does not collect these data.

4.3.4 Promotion and Education:

Promotion and education programs on recycling are delivered to the residents and schools by the municipality. MPSC provides some assistance, guidance, and materials for this exercise in addition to those provided by the municipality before the inception of MPSP.

Promotion and education are the responsibilities of the RM and are facilitated through printed materials, newspaper advertisements, as well as radio and television. Printed materials are delivered to households on an irregular schedule, and newspaper ads are provided as frequently as human resources and funding permit. Printed materials are also handed out in public places and during community social events where recycled articles are also displayed. MPSP billboards are also displayed adjacent to the neighboring highways.

Schools have been found to be powerful venue for recycling promotion and education in the RM of Roland as recycling has now been integrated within the school curriculum. MPSP provides assistance through providing the recycling program communities with mailers, the most popular being "Recycle -> It's Worth It !" This mailer outlines accepted recyclables in each community. Mailers and printed materials for recycling program are distributed to residents through tax notices and utility bills by the R.M. Another popular mailer/sticker available through MPSP is the "If You Not Recycling, You're Throwing It All Away." These mailers and stickers also come in billboard sizes for highways and community display.

4.3.5 Other Waste Reduction Activities

No composting or other waste reduction exercise is available in the Rural Municipality of Roland.

4.3.7 R.M. of Roland: Remarks on Net Change

Prior to the inception of MPSP in 1995, the R.M. of Roland had a recycling program which continued to expand in response to the Government of Manitoba's 50% waste reduction initiatives. Since 1995, recycling has not increased noticeably in this community, except for a dramatic jump experienced in 1999. The level of recycling promotion and education through MPSP and the community has improved since the inception of MPSP. The R.M. has reported a continued improvement to its recycling program and asserts its intention to continue in this direction.

In addition to the 4" x 8" recycling information guide provided by MPSP, the R.M. of Roland has created its own one-pager information guide that lists, in photo format, all accepted recycling materials, pick-up schedules for both depot and curbside, and other relevant recycling information.

According to Sherry Peirson, the R.M. of Roland's Municipal Clerk, recycling in this R.M. has made good progress over the past few years, and she has confidence that this progress will continue. Peirson added that the recycling program has reduced the pressure on landfills and has reduced the unclean environment caused by littered wastes within the municipality.

Unlike the City of Portage La Prairie, the RM of Roland's Residential Solid Waste Recycling Program was already in operation before the inception of the Manitoba Product Stewardship Program in 1995. The RM of Roland, therefore, uses the grant money from MPSP for improvement and expansion of its existing program. The curbside collection program was established after the inception of MPSP.

In conclusion, the Rural Municipality of Roland has experienced some positive net-change in Residential Solid Waste Recycling between 1995 and 2000. The major net changes came by way of increased number of acceptable recyclable materials, a steady and well established funding from MPSP which has reduced the pressure on the

municipality to cut back on recycling support, better education media and materials, improved record keeping, and easier access to the program.

4.4.0 R.M. of Grey Overview

The R.M. of Grey represents the four rural Manitoba communities within the South-central Recycling Region having a population between 2,000 and 3,000. The R.M. of Grey, a member of the Pembina Valley Recycling Network (PVRN), started its recycling program in the early 90s. In an attempt to meet the Government of Manitoba's goal of 50% municipal waste diversion from landfill, as well as wishing to expand its existing program, the R.M. of Grey joined MPSP in June 1995 and has continued to look for better ways to recycle.

In 1994, the R.M. of Grey started its public consultation on how to meet the Government's waste minimization goal. One of the outcomes of the public consultation was the municipality's to combining its depot and curbside collection programs with the Government's MPSP to achieve a more successful recyclable program. The R.M. of Grey's recycling activities are represented below.

4.4.1 Waste Generation and Diversion Rates in the R.M. of Grey.

Table 26 shows that recycling was available in the R.M. of Grey one year before MPSP's 1995 launch. It further reveals that diverted materials rose significantly in 1997 and have remained at higher level since then. Part of this increase can be attributed to enhanced education and promotion programs initiated in conjunction with MPSP support. Further, for easy program access, two depots were established in the villages of Haywood and St. Claude after the R.M. joined MPSP in June, 1995.

Prior to the inception of MPSP in 1995, the R.M. of Grey had both curbside and central depot recycling programs, but no records are available for the years prior to MPSP.

Participation rates are estimated at 130 for single dwellings using the curbside system and 898 for the depot system. Recycled quantity has continued to increase except for 1999 where some drop was observed.

Table 26: R.M. of Grey: Waste Generation Rates in tonnes.

Year	Generated	Recyclable	%
1992	N/A	-	-
1993	N/A	-	-
1994	N/A	-	-
1995	N/A	16.1	-
1996	389.2	20.5	5%
1997	389.2	27.5	7%
1998	574.4	36.2	6%
1999	574.4	31.3	5%
2000	397.7	35.4	9%

R.M. of Grey, Waste Management Operations and Annual Reports

Note: These figures do not match MPSP figures due to the fact that MPSP reports are based on the fiscal year (April to March) while the R.M. Grey's are based on the calendar year (January to December).

Table 27 shows that newspaper is the major material for this community and supports the argument that newsprint is the most abundant recyclable material in the residential solid waste stream found in landfills. The community continues to increase its collectable material, and year 2000 is this community's best year for recycling with respect to quantity of materials collected.

Table 27: R.M. of Grey: Tonnes of Recycled Materials.

Year	Newsprint & Flyers	Magazine	Phone Books	Box Board	Gabletop Cartons	Aseptic Cans	Steel Cans	Aluminum Cans	PET(#1) Plastic	HDPE Plastic	Glass Cans	OCC	Annual Total
1992													
1993													
1994													
1995	14.7						0.5		0.5		0.4		16.1
1996	11.1						0.8		1.3		2.5	4.8	20.5
1997	15.6			0.2		0.1	1.0	0.6	1.0		3.4	5.6	27.5
1998	22.9			0.9		0.1	2.7	1.8	0.8		3.0	4.0	36.2
1999	20.9			0.8			1.0	0.9	0.9		3.1	3.7	31.3
2000	22.4	1.2	0.4	1.1	0.2	0.1	1.4	0.9	0.4	0.6	3.1	3.6	35.4

R.M. of Grey, Waste Management Operations and Annual Reports

4.4.2 Types of Recycling Activities and Infrastructure.

The R.M. Grey operates both curbside and depot recycling programs but no composting programs for waste reduction. The curbside system is available to the Village of Elm Creek residents and is contracted to a private individual who also provides the garbage collection services for the village. These activities were established before MPSP, but depots were established in the villages of Haywood and St. Claude after the R.M. joined MPSP in June, 1995.

Central depot drop-offs are located in the villages of Elm Creek, Haywood and St. Claude. The depots are operated by a community volunteer group and are open 24 hours a day, seven days a week. Curbside collection is a once-a-week, Thursday morning, event; and residents are expected to properly bag all recyclables and to place them on the curbside for pickup. Residents are reminded by radio, printed mailers and through

community events of pick-up and delivery times, as well how to properly handle recyclable materials. Materials are collected and transported to Gateway Resources in Winkler where they are sorted, bailed and shipped to market.

Plate 4: R.M. of Grey: Recycling Depot



(Okwumabua, N. 2002)

Volunteers participate in a variety of activities, such as providing speeches and education, as well as handing out printed materials on recycling in community events. Participation is estimated in the curbside program at 130, and 898 households use the depots. Via local businesses and the R.M. office, the municipality supplies free plastic bags for recycling.

4.4.3 Operating Costs, Revenue and Other Sources of Funding.

The R.M. of Grey receives \$152.00 funding from MPSP for every tonne of recyclable residential solid waste collected. To cover any operating fund deficit, the R.M. is expected to generate additional funds from its fundraising activities, other government and non-government interest groups grants, and sales of its finished-product.

Table 28: R.M. of Grey: Estimation of Cost per Tonne.

Year	Tonne/Yr.	Collect & Process \$s	Admin \$s	Promo & Educa \$s	Tot. Cost	Tot Rev (MPSP)	Cost per tonne
1992							
1993							
1994							
1995	16.1	.n/a	.n/a	.n/a	.n/a		
1996	17.0	.n/a	.n/a	.n/a	.n/a	\$2,585.08	
1997	32.0	.n/a	.n/a	.n/a	.n/a	\$4,356.87	
1998	33.3	.n/a	.n/a	.n/a	.n/a	\$5,062.82	
1999	31.3	.n/a	.n/a	.n/a	.n/a	\$4,762.54	
2000	35.3	.n/a	.n/a	.n/a	.n/a	\$5,361.04	

R.M. of Grey, Waste Management Operations and Annual Reports

Note: ** Tonnes adjusted for late reports, claims and allowable 5% residue. Operating cost was not available.

4.4.4 Promotion and Education:

As in the R.M. of Roland, promotion and education programs on recycling are delivered to the residents and schools by the municipality. MPSC provides some assistance, guidance, and materials for this exercise in addition to those provided by the municipality before the inception of MPSP.

Promotion and education are the responsibilities of the RM, and facilitated through printed materials, newspaper advertisement, as well as radio and television. Printed materials are delivered to households at irregular intervals, and newspaper ads are provided as frequently as funding permits. Printed materials are also handed out in public places and during community social events where recycled articles are also displayed. Billboards are also displayed adjacent to neighboring highways.

Schools have been found to be a powerful venue for recycling promotion and education in the RM of Grey through the MPSP STAR program. MPSP provides assistance through providing the recycling program communities with mailers, the most popular being "Recycle -> It's Worth It !" This mailer outlines accepted recyclables in each community. Mailers and printed materials for recycling program are distributed to residents through tax notices and utility bills. Another popular mailer/sticker available through MPSP is the "If You Not Recycling, You're Throwing It All Away." Both mailers and stickers also come in billboard sizes for highways and community display.

One initial concern expressed by one of the RM's recycling coordinators was the community's lack of knowledge about what should or should not be recycled. This lack of knowledge discouraged some residents from participating in recycling activities. This impediment has been reduced through better education and promotion in the community.

4.4.5 Other Waste Reduction Activities

Composting of yard waste is not available as a waste reduction initiative in the Rural Municipality of Grey.

4.4.7 Remarks on Net Change (RM of Grey)

Prior to the inception of MPSP in 1995, the R.M. of Grey had both curbside and central depot recycling programs, with participation rates of 130 for residential curbside system and 898 for depot system in 1994. Since that year, these rates have not changed as the community, itself, has not shown any significant growth in population. While the number of participants has not increased, the recyclable volume has grown, which indicates greater response per participant due to program education and promotion. In addition, two depots were established in the villages of Haywood and St. Claude after the R.M. joined MPSP in June, 1995. The two depots improved access to the community's recycling program.

The R.M. of Grey has reported a continued improvement to its recycling program, and it continues to search for better ways to promote the program and provide more education for and awareness to its population.

During the first year of its recycling program, the R.M. of Grey limited collected materials to tin cans and newspaper, but, since then, it has increased this list to include all materials on both the MPSP and the Pembina Valley Recycling Network lists. Recycled

material quantities have shown a steady increase that can be attributed to MPSP, which made more financial and program promotion and education supports available to the R.M. of Grey. Another factor has been the strong and dedicated efforts from community volunteers and the community Recycling Committee.

In addition to the 4" x 8" recycling information guide provided by MPSP, the R.M. of Grey has created its own one-pager information guide that also lists, in photo format, all accepted recycling materials, pick-up schedules for both depot and curbside, as well as other relevant recycling information. The community also invites speakers at community event days to speak about the benefits of recycling.

The R.M. of Grey residential solid waste recycling program has made a good progress over the past few years, and officials have the confidence that this progress will continue into the future years. The progress is hoped to continue to reduce the pressure on landfills, and to reduce the unclean environment caused by littered wastes within the municipality.

Recycling activities in this community continue to grow faster than the human resources available for the labor involved. One of the Municipality's staff, who also volunteers in her community's recycling program, expressed a concern regarding the inadequate number of staff to handle the workload in this RM's recycling program. She added that under-staffing is an impediment to the Municipality's recycling program. The R.M. of Grey was the most difficult community for data collection. Most of the recycling staff in

this community have their fulltime employment and help the community recycling when possible. Some of these volunteers are school teachers in the community.

4.5 Chapter Summary

The goal of this chapter was to collect residential solid waste recycling data from sample municipalities of the study region for analysis in an effort to estimate the net change in residential recycling in this region pre and post the inception of MPSP. Data have been outlined for each sample municipality (the City of Portage la Prairie, the Town of Winkler and the R.Ms of Grey and Roland). Collected data have revealed that the Town of Winkler and the R.Ms of Grey and Roland had some level of recycling programs before the inception of MPSP and that these communities are using MPSP to improve and expand their existing programs. The City of Portage la Prairie was without a recycling program before MPSP and has used MPSP assistance and incentives to start new programs and to expand on them.

Data have been collected from these sample communities to investigate net changes, if any, in waste generation rate; diversion rate; type of recycling activities and infrastructure; recycling costs and revenue; program promotion and education, as well as community and government involvement since the inception of MPSP. Net changes for each sample community have been identified under the "Remarks and Net Change" sections of each community. A summary of these changes is provided below.

- Types of MPSP eligible materials collected did not show any noticeable change in the Town of Winkler where recycling existed and was well established before MPSP. The R.Ms. of Roland and of Grey also had recycling before MPSP, but they showed a minimal increase in MPSP eligible materials. Portage la Prairie had no program before MPSP; therefore, the net change in this community is infinite.

Table 29: Summary Changes: Types of Materials Collected by Community and Year.

	1994	2000
Portage	No recycling program	<ul style="list-style-type: none"> • Glass: All types • Metal: (Aluminum and steel cans) Paper: (OPB, OCL, OCC, OMG, ONP & Flyers) • Plastic: All plastic containers • Milk cartons • Food & Yard waste
Winkler	<ul style="list-style-type: none"> • Glass: All types • Metal: (Aluminum and steel cans) Paper: (OPB, OCL, OCC, OMG, ONP & Flyers) • Plastic: # 1 plastic • Milk cartons • Food & Yard waste 	<ul style="list-style-type: none"> • Glass: All types • Metal: (Aluminum and steel cans) Paper: (OPB, OCL, OCC, OMG, ONP & Flyers) • Plastic: All plastic containers • Milk cartons • Food & Yard waste
R.M. of Roland	<ul style="list-style-type: none"> • Glass: All types • Metal: (Aluminum and steel cans) Paper: (OPB, OMG, ONP & flyers) • Plastic: # 1 plastic • Milk cartons 	<ul style="list-style-type: none"> • Glass: All types • Metal: (Aluminum and steel cans) Paper: (OPB, OCL, OCC, OMG, ONP & Flyers) • Plastic: All plastic containers • Milk cartons
R.M. of Grey	<ul style="list-style-type: none"> • Glass: Liquor bottles • Metal: (Aluminum and steel cans) Paper: (OPB, OMG, ONP & Flyers) • Plastic: Pop bottles • Milk cartons 	<ul style="list-style-type: none"> • Glass: All types • Metal: (Aluminum and steel cans) Paper: (OPB, OCL, OCC, OMG, ONP & Flyers) • Plastic: # 1 plastic • Milk cartons

Nat Okwumabua, 2001

- Total Waste Generated:

As shown in Tables 30 and 31, total amounts of waste generated in the Town of Winkler and the City of Portage la Prairie, where data were available, showed a two-year fluctuating pattern, increasing in 1996 and 97, decreasing in 1998 and 99, and then increasing again in 2000 while recycled quantities increased over these years. Roland and Grey were estimates from Residential Waste Composition study (Earthbound Environmental) commissioned by MPSC. The R.M. of Roland shows steady decrease in amount of waste generated.

Table 30: Summary of Total Waste Generated by Community and Year

	1994	1995	1996	1997	1998	1999	2000
Portage	n/a	n/a	2,510	2,651	2,105	2,070	2,214
Winkler	n/a	n/a	1,286	1286	1107	1107	1446
Roland	n/a	n/a	220	220	200	200	163
Grey	n/a	n/a	389	389	574	574	398

- Recycled Tonnage:

The total amount of MPSP eligible materials recovered through municipal residential solid waste recycling programs has showed little to moderate growth in the Town of Winkler, and the R.Ms of Roland and Grey where recycling existed before MPSP. The R.M. of Grey experienced more positive net change than Winkler and Roland. The city of Portage la Prairie, which had no recycling program prior to MPSP, obviously showed the greatest positive net change of the four sampled communities. MPSP eligible materials recovered in the four sampled communities was 311.1 tonnes in 1994. At the end of year

2000, this amount had increased to 1,374.4 tonnes, for a 342% positive net change since the inception of MPSP.

Table 31: Summary of Progression of Amount of Materials Recycled per Year (tonnes).

Year	1994	1995	1996	1997	1998	1999	2000
Portage	0	53	320	335	484	769	970
Winkler	294	380	283	299	286	300	378
Roland	17	18	19	19	20	29	21
Grey	N/A	16	17	30	35	32	35
Total	311	467	639	683	825	1130	1,404

Table 32: Summary of Recycled Material Net Change 1995 & 2000 (tonne).

Year	1995 base Yr	2000 change	Net change	% change
Portage	53	970	917	1730%
Winkler	380	378	-2	Null
Roland	18	21	2.2	12%
Grey	16	35	3	17%
Total	467	1404	937	201%

The City of Portage la Prairie, which had no recycling program before the inception of MPSP, showed the highest net positive change. There was no change in Winkler. Changes in the R.M.s of Grey and Roland were moderate.

Table 33: Summary of Per Capita Rates (Kg) of Generated Material 1996, 1998 and 2000

Year	1996	1998	2000
Portage	201	173	226
Winkler	201	173	226
Roland	227	207	168
Grey	185	273	189

Per capita waste generation study is commissioned by MPSC every two years and the first year being 1996. Studies and figures are based on aggregate population sizes. (MPSC 2002) The study did not reveal any steady change in per capita generation rates.

Based on the quantities of recycled materials in the four sampled communities, using paper as an example and illustrated in Table 34, it becomes quite evident that recycling can serve as one of the major tools for facilitating resource conservation and waste management in the South-central Recycling Region of Manitoba, and, by extension, across the world. In turn, recycling, therefore, has the potential for helping to achieve the goals for sustainable development of the World Commission on Environment and Development.

Table 34: Summary of Amount of Paper Waste Recycled per Year (tonnes).

	Year	1995	1996	1997	1998	1999	2000
Portage		52.6	278.4	240.4	281.2	487.7	558.6
Winkler		119.6	145.4	163.7	221.5	212.2	213
Roland		12.7	14.6	16.2	16.2	18.7	11.4
Grey		14.7	11.1	15.8	23.8	21.7	25.1
Total		199.6	449.5	436.1	542.7	740.3	808.1

It should be noted that these figures are only residential figures and do not include industries, commercial and institutions where more paper consumption is prominent.

- **Recycling Infrastructure:**

The Town of Winkler and the R.M. of Roland, two of the three sampled communities, where recycling existed before MPSP, did not show any change in infrastructure. The R.M. of Grey added two depots in the villages of Haywood and St. Claude after the inception of MPSP. The city of Portage la Prairie, which had no recycling program prior to MPSP, obviously showed the most positive net change in infrastructure. The support payment from MPSP encouraged the expansion in R.M. of Grey and the establishment of recycling program in Portage la Prairie.

- MPSP Support Payment:

MPSP pays a flat support payment per tonne of eligible residential recycled waste to rural municipalities. Municipal Recycling Support Payments (MRSP) for the sampled communities have increased from \$96,793.00 in the 1996 fiscal year to \$206,560.00 in the 2000 fiscal year for a net positive change of \$109,793.00 or 113%.

Table 35: Summary of MPSP Support Payment by Community and Year.

Year	1994	1995	1996	1997	1998	1999	2000
Community							
Portage	-	-	\$48,661	\$50,904	\$73,624	\$116,843	\$147,360
Winkler	-	-	\$43,028	\$45,457	\$43,476	\$45,583	\$50,662
Roland	-	-	\$2,519	\$2,842	\$2,964	\$4,393	\$3,177
Grey	-	-	\$2,585	\$4,357	\$5,063	\$4,763	\$5,361
Total	-	-	\$96,793	\$103,560	\$125,127	\$171,582	\$206,560

Even though MPSP pays a flat support payment of \$152.00 per tonne of eligible municipal residential recyclable waste, my research shows that it costs all sampled communities less than \$152.00 to recycle a tonne of waste. Therefore, it becomes obvious that these communities use part of their MPSP support payment for other municipal operations that may or may not relate to recycling. It should be noted that support payment figures do not take into account whatever value, if any, the recyclable materials may have on the open market. In most cases in Manitoba, municipalities do not retain any revenue generated by these recyclables; rather, it stays with the service provider or contractor.

- Participation Rate:

Three of the four communities sampled, the Town of Winkler, the R.Ms. of Roland and of Grey participated in recycling before MPSP. The City of Portage la Prairie had no recycling program until joining MPSP in 1995. Because the sampled communities did not show noticeable changes in population, it can be concluded that the minimal to significant increase in quantities of recycled materials are also the measures of increases in participation rates. With this measurement, net positive changes in Winkler and the R.M. of Roland were negligible, moderate in R.M. of Grey where two new depots were added for easy access, and excellent in the City of Portage la Prairie, where new recycling and user-pay programs were established. It can be argued that the user-pay system in the City of Portage la Prairie was the major driving force behind the high level of participation in this community.

- Promotion and Education:

Prior to the inception of MPSP, the Town of Winkler, the R.Ms of Roland and of Grey, where recycling was well established, had their promotion and education programs in place. Winkler had its handbook on waste management and recycling as well as one-pager information sheet outlining acceptable recyclables, collection cycles and dates, methods of handling materials and depot locations. These information materials were made available to the neighboring communities that belonged to Pembina Valley Recycling Network and other interest groups. The City of Portage la Prairie established its program and education following the inception of MPSP.

MPSP's contribution to recycling promotion and education are mainly via finding new and better ways for recycling coordinators to reach out and encourage residents. MPSP also provides and pays for easy-to-read and understand flyers, as well as on-the-fridge stickers for daily reminders. Through MPSP support payments, schools have integrated recycling promotion and education into their curricula. This school-based approach is a critical initiative as it is mandatory that the younger generations understand the implications of their footprints on the planet.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions:

This study began with the goal of evaluating the net changes in existing residential solid waste recycling in the municipalities of South-central Recycling Region of Manitoba (SCRRM) pre- and post the establishment of the Manitoba Product Stewardship Program. The City of Portage la Prairie, the Town of Winkler, the R.M. of Grey and the R.M. of Roland were used as case study communities. The study found the following changes in residential solid waste recycling for the sample communities.

- Quantities of Recycled Materials:

Municipalities, such as the Town of Winkler, the RM of Roland and the R.M. of Grey where recycling existed before the inception of Manitoba Product Stewardship Program, showed moderate positive net changes in the quantities of recycled materials. The City of Portage la Prairie had no recycling program until MPSP; therefore the net change for this community is absolute both for the list of acceptable materials and the quantity of materials recycled. It should be noted, though, that, although Portage la Prairie had no program until the inception of MPSP, its program has seen more growth in recycled quantity than other communities since its first year of MPSP, and this change is attributable to the City's user pay.

- Type of Materials Collected:

Types of materials collected did not show any change in the Town of Winkler and the R.M. of Grey, but Roland added OCL, OCC and #2 plastics. Recycling was well established in these three communities before MPSP. Portage la Prairie had no program before MPSP, and once again the net change here is absolute in term of materials collected.

- Recycled Tonnage:

Total reported tonnage of MPSP eligible materials recovered through municipal recycling systems in 1994 was 5,500 tonnes. The total tonnage collected in 1995 almost tripled to 15,559 tonnes. MPSC also reported that over 38,827 tonnes of eligible materials were recycled province-wide in 2000, an overall positive net change of 23,268 tonnes or approximately 150% compared to 1995. The total amount of MPSP eligible materials recovered through municipal residential solid waste recycling programs has continued to grow in the four sampled communities. A total of 311 tonnes was recycled in 1994 and 467 in 1995 in the four communities. During 1996, the first full fiscal year of MPSP, the total amount recycled in these four communities rose to 639, an increase of 37% over the 1995 figure. At the end of fiscal year 2000, MPSP eligible materials recovered in the four sampled communities totaled 1,404, an increase of 201% compared to 1995. The bulk of this growth came from Portage la Prairie where recycling started in 1995. Recycled quantity in Portage la Prairie rose from 53 tones in 1995 to 970 in 2000, a net change of 917 tonnes or 1,730%.

- Education and Promotion:

Educational and promotion on recycling are areas where all the communities achieved strongest results. Educational materials were scanty or non-existent in some communities of the province before the inception of Manitoba Product Stewardship Program. Prior to the inception of MPSP, the Town of Winkler, the R.M. of Roland and the R.M. of Grey, where recycling was well established, had their promotion and education programs in place. Winkler had a handbook on waste management and recycling, as well as a one-pager information sheet outlining acceptable recyclables, collection cycles and dates, methods of handling materials and depot locations. These information materials were made available to the neighboring communities that belong to Pembina Valley Recycling Network and other interested groups. The City of Portage la Prairie established its program in line with this model, but after the inception of MPSP. MPSC has continued to encourage these activities through billboards and annual refresher seminars. Currently, every municipality has its own one page information guide in addition to those supplied by MPSC. MPSP's contribution to recycling promotion and education are mainly in the ways of finding new and better ways for municipal recycling coordinators, through community events and schools, to reach out and encourage residents' knowledge. MPSP also provides and pays for easy-to-read and understand flyers, as well as on-the-fridge stickers for daily reminders. Through MPSP support payment, schools have integrated recycling promotion and education into their curricula.

- Collection Infrastructures:

Across the board, communities have reported positive net changes in collection infrastructures. Due to the funding support for the collection and processing of recyclables from Manitoba Product Stewardship Program, the Town of Winkler, the R.M. of Grey and the R.M. of Roland have been able to divert some funds previously used for recycling to purchasing more depot bins and for expanding their services for easier access to the program.

- Program Funding:

Municipal Recycling Support Payments (MRSP) for the sampled communities have increased from \$84,005.00 in the 1996 fiscal year to \$209,795.00 in the 2000 fiscal year, thereby providing substantial support to all programs. MPSP support payments have helped existing programs in Winkler, the R.Ms. of Grey and of Roland to divert their pre-MPSP recycling funds to other areas of their respective municipal operating budgets, and in Portage la Prairie, allow program start-ups.

- Employment in Recycling:

Employment in recycling has increased in the SCRRM since the inception of MPSP. Prior to MPSP, most of the people involved in recycling in the SCRRM were volunteers. Currently, there are more than 20 full-time employees serving the four sample communities.

This summary of findings shows that, based on the amount of waste diverted in the four sampled communities, MPSP is having a positive net impact on residential solid waste recycling programs in these communities. This finding indicates that recycling can serve as one of the tools for facilitating resource conservation and waste management in the South-central Recycling Region and, in turn, can help to achieve the WCED goals for sustainable development. One must keep in mind, however, that the data revealed that waste generation rates are not falling despite these recycling activities. This finding underscores the need for waste reduction and reuse.

These results show that the MPSP program has impacted the study communities in different ways. The net change in the recycling programs in the Town of Winkler, the R.M. of Grey and the R.M. of Roland, where recycling existed before MPSP, can best be described as moderate. Little has changed within these programs in terms of collection methods, types of materials collected and the amounts of material diverted from landfill. Each of these communities has, however, obtained a significant benefit in terms of relief to the municipal tax base through the support payments provided by MPSP. This influx of funds has allowed program managers to make the important transition from volunteer labor to full-time employees. Such a change helps to ensure the longevity of the recycling programs.

In the case of the City of Portage la Prairie, the net change in the recycling program has been most dramatic simply because they were one of the Manitoba communities that did

not have any recycling prior to MPSP. The support payments offered through MPSP provided community leaders with enough incentive to move forward and implement a program. Once the recycling program was in place, community leaders moved to implement a user-pay waste collection system to encourage participation in the “free” recycling program. This move had dramatic results in terms of the amount of material diverted from landfill, and other communities would do well to study the Portage experience.

While this study reveals little change in recycling activity in the communities that had recycling prior to MPSP, there is little doubt that the \$152.00 a tonne support payment provides incentive to keep programs operational in times of fiscal restraint. In fact, the findings regarding the per-tonne support rate indicate that in some years the total cost of the recycling program to a municipality was covered and, in some cases, actually generated a surplus. This finding highlights the need to refine the system of support payments to more closely reflect the cost sharing (proposed 80/20 split of cost between the province and municipality) that was to have occurred between municipalities and the provincial government to ensure the sustainability of the MPSP program.

The findings also indicate that, while the recycling programs in each of these communities were important in facilitating resource conservation and sound waste management practices, they have had little impact in the amount of waste going to the landfill. In the case of Winkler, Grey and Roland, they are just keeping pace with

increases in waste generation. This finding means that the province is going to have to look to more aggressive means if it hopes to achieve its 50% waste diversion goal. Furthermore, it is imperative that continued consideration be given to sustained funding, sound education, better collecting and processing techniques to ensure an effective residential solid waste recycling is maintained in the province.

Recommendations:

Even though my study has shown MPSP has a positive impact on the recycling in the four study communities, it also shows that some areas still need improvement.

1) For a recycling program to be effective and cost efficient, the volume of recyclable materials should be large. It can be argued, that in communities of larger populations, the per capita or per tonne costs associated with waste management, including recycling, could be inversely proportional to the communities' population. In smaller communities, the small population size would be an impediment to providing adequate waste management and recycling facilities by the individual communities. The amount of waste produced in smaller communities may not justify the costs associated with waste and recycling facilities required for these communities. Smaller communities do not have the population and hence the volume to run their respective program. Therefore, it is my recommendation that:

- The Province and Manitoba Product Stewardship Cooperation should encourage establishment of more recycling network systems, such as the PVRN, in the South-central Recycling Region of Manitoba to allow smaller communities to pool their resources for a more effective recycling program. Additionally, the Province and MPSC should, instead of maintaining the current voluntary system, require all municipalities to participate in MPSP.

2) Since 1995, recycling in the City of Portage la Prairie has increased from 53 tonnes in 1995 to 970 tonnes in 2000, a net increase of 1730% in only five years. The

tremendous increase can be largely attributed to the introduction of the recycling program incentives, as well as the institution of a user-pay program for the collection and disposal of non-recyclable waste, both of which are directly linked to the advent of funding support from the MPSP. This result supports the argument that a user-pay waste collection system can increase recycling activities and reduce waste volumes. Other municipalities in Canada (e.g. Halifax) have also had success in diverting recyclables from the waste stream through implementing landfill bans.

- It is recommended that the Province and MPSP help communities to understand the benefits of a non-recyclable waste collection user-fee, using the City of Portage la Prairie as an example. The benefits of landfill ban, if any, should also be investigated.
- 3) Even though MPSP pays a flat support payment of \$152.00 per tonne for eligible municipal residential recyclables, this research shows that in most years the cost of the collection and processing of designated materials in all sampled communities is less than \$152.00 a tonne. It seems clear that the communities studied use part of their MPSP support payment for other municipal operations that may or may not relate to recycling. It also undermines the philosophy of the MPSP program for municipal/provincial cost sharing.
- It is recommended that a thorough cost monitoring audit of MPSP support payments to communities for their recycling programs be mandated and that adjustments to the funding formula be made if necessary.

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