

MAINE STATE LEGISLATURE

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**Report on 1997 Solid Waste Generation and
Disposal Capacity Report
to the Joint Standing Committee on Natural Resources
of the 119th Legislature**

January 1, 1999

State Planning Office
Waste Management & Recycling Program
38 State House Station
Augusta, Maine 04333-0038
(207) 287- 8050



STATE OF MAINE
EXECUTIVE DEPARTMENT
STATE PLANNING OFFICE
38 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0038

ANGUS S. KING, JR.
GOVERNOR

EVAN D. RICHERT, AICP
DIRECTOR

January 7, 1999

The Honorable Sharon A. Treat, Chair
Joint Standing Committee on Natural Resources
State House Station 115
Augusta, Maine 04333

Dear Senator Treat and Committee Members:

I am pleased to submit the 1997 Solid Waste Generation and Disposal Capacity Report to you and other members of the Joint Standing Committee on Natural Resources. This document fulfills the State Planning Office's requirement (38 M.R.S.A. 2124-A) to report to the Legislature on:

- statewide generation of solid waste;
- statewide recycling rates; and
- available disposal capacity.

This report presents the 1997 state recycling rate, as well as the most current information on disposal capacity for the state. It also raises several issues regarding solid waste management that will need to be addressed in the near future.

If you have any questions, contact me or my staff assigned to this project -- George MacDonald or Lisa Baldwin.

Sincerely,

A handwritten signature in black ink, appearing to read 'E. Richert', written over the word 'Sincerely,'.

Evan D. Richert, AICP

A small recycling symbol consisting of three chasing arrows forming a triangle.

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OFFICES LOCATED AT: 184 STATE STREET
Internet: www.state.me.us/spo

PHONE: (207) 287-3261

FAX: (207) 287-6489

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I. Executive Summary

The purpose of the Solid Waste Generation and Disposal Capacity Report is to analyze how effectively Maine is managing its solid waste; identify potential future issues; and measure Maine's recycling progress up to 1997. This report follows and updates the recent Waste Management and Recycling Plan. Specifically, it provides information on statewide waste generation, the state recycling rate, and current disposal capacity. Some of the significant findings from the report include the following:

- Maine residents, businesses and visitors generated 1,635,136 tons of Municipal Solid Waste (MSW) in 1997, up from 1,339,352 tons in 1995 and 1,293,401 tons in 1993. This increase from 1995 is largely due to a combination of economic growth and improved collection of MSW disposal data.
- 42% of the municipal solid waste stream was recycled in 1997. While this is a slight improvement over the 41% in 1995, the state is only marginally closer to the 50% statewide recycling goal set for 1998. However, considering the nearly 300,000 tons of additional MSW generated, this slight increase actually represents an additional 123,000 tons of recyclables over 1995. Maine still ranks among the top 10% of states ranked by percentage of municipal solid waste recycled.
- Recycling and incineration continue to handle over 80% of Maine's MSW. In 1997, exactly 40% of the MSW generated was incinerated in one of Maine's four waste-to-energy incinerators. This situation has remained stable over the past 8 years.
- The ban on new commercial landfills and the closing of licensed and unlicensed landfills has left 10 remaining landfills in Maine (8 municipal & 2 commercial). The total amount of MSW managed through landfilling was 162,575 tons (10 % of total MSW generated). All MSW imports are directed into Maine's waste-to-energy incinerators. The remaining 8.5% of MSW was exported out-of-state.
- Currently, there are two commercial landfills serving the state -- Waste Management Inc. (WMI) and Sawyer Environmental Recovery Facility (SERF). However, SERF's expansion is in question at this time due to a recently enacted moratorium on landfill expansion by the Town of Hampden and two pending appeals of SERF's DEP license. If SERF were to cease operations in Sept. 1999, the state would have commercial landfill capacity of between 6.5 to 8 years, depending on the level of reliance on alternative management methods.

II. Introduction

The Maine State Planning Office is required by 38 M.R.S.A. 2124-A to report to the Legislature on:

- statewide generation of solid waste;
- statewide recycling rates; and
- available disposal capacity.

The subject of this report is consistent with the goals and objectives of the State Planning Office's strategic plan for the Waste Management and Recycling Program. The stated goal is to: "Plan for changes in waste management trends that ensure sufficient and economically-viable disposal and recycling capacity, improve and support SPO's municipal technical assistance programs, and provide analyses and policy recommendations to the Legislature."

The calculation of the solid waste generation and the recycling rate includes Municipal Solid Waste (MSW) only (i.e. special waste is excluded from the calculation). MSW is the waste typically generated by households and businesses and managed by municipalities. It includes nonbulky waste (corrugated cardboard, newsprint, office paper, mixed paper, food waste, plastics, glass, metals and textiles) and bulky waste (tires, appliances, furniture, wood waste, yard waste, inert fill, and construction and demolition debris).

In evaluating disposal capacity, this report addresses both special waste and MSW disposal issues. Special waste includes various nonhazardous industrial and process wastes including sludges and solid waste incinerator ash. Disposal facilities include 4 waste-to-energy incinerators, 8 municipal landfills permitted to accept MSW, 8 municipal landfills permitted to accept special waste, and 2 commercial landfills permitted to accept special waste and construction & demolition debris.

III. Statewide Waste Generation and Recycling Rate

A. Methodology

Overview

Since 1989, Maine law has charged the State, (State Planning Office), with analyzing and preparing a plan for the management, reduction and recycling of solid waste for the State. In response to this directive, the State has kept a census of the percentage of municipal solid wastes recycled in Maine. This census is part of the ongoing effort of the State to reach a recycling goal of 50% of the municipal solid waste stream by 1998 and to track municipal progress toward achieving this goal.

In 1992, the State's first formal assessment of the recycling effort in Maine consisted of a Broker's Survey and a composition study of municipal waste. In 1993, the State conducted its first full survey of municipal and private recyclers -- the 1997 recycling survey follows the 1995 and 1993 surveys. This survey is used to estimate the tonnage of municipal solid waste generated in Maine that is managed by private recycling companies. The state has three complete years of solid waste information based on the methodology outlined in this report.

This information is used in conjunction with data collected from Municipal Solid Waste Annual Reports, which is also used to calculate recycling rates for municipalities and regions. While Maine municipalities are required to report MSW disposal and recycling data for their municipal and solid waste management association, there is currently no penalty for non-reporting. On the whole, municipalities have been very cooperative in providing data via the Municipal Solid Waste Annual Reports; however, private sector cooperation has been less reliable.¹

MSW Generation

The amount of wastes recycled and annually reported by municipalities is combined with the data derived from the Broker's Survey and information gathered from other sources to form an estimate of the level of waste generation and recycling in Maine; these other sources include the annual reports of disposal facilities (landfills and incinerators) and disposal data from neighboring state and provincial governments. The estimated statewide solid waste generation combines the amount of waste disposed (incinerated, landfilled and exported), recycled, composted, and reused.

¹ State Planning Office contracted with a consulting firm to conduct the 1997 recycling survey of private companies. The agency contracted these services to an outside vendor primarily to ensure the confidentiality of the data that companies would be reporting. Some firms are reluctant to participate in the survey due to the proprietary nature of the information and the possible effect on their competitiveness.

Recycling rate

The recycling rate was derived by using recycling and disposal data in conjunction with the following formula:

$$\text{Recycling Rate} = \frac{\text{(recycling)}}{\text{(disposal + recycling + reuse)}} * 100$$

This process is not a precise measurement. Some data is incomplete, particularly for recycling activity in the private sector. Additionally, adjustments were made to try to eliminate duplicate counting when material moves from a broker to an in-state end-user. Although there may be errors in the estimates for some individual materials, SPO estimates that the overall result is accurate to within a 5% margin of error.

B. Statewide MSW Generation

Maine residents and visitors generated 1,635,136 tons of MSW in 1997; this is a significant increase over the 1,339,352 tons of MSW in 1995 and 1,293,401 in 1993. MSW management methods and amounts for 1997 (disposal, recycling, and generation) are outlined in **Appendix A**. These numbers were adjusted to account for imports and exports across state lines in order to include only waste generated in Maine.

C. Statewide Recycling rate

The State Planning Office estimates that 42% of the municipal solid waste was recycled in 1997. This is a slight increase over the 41% rate in 1995. In addition, total recycled material has risen significantly, increasing from 556,795 tons in 1995 to 679,878 tons in 1997; this increase in tonnage only represents a small increase in the recycling rate because total MSW generation and disposal were substantially higher in 1997. The material breakdown and totals for recyclables in 1993, 1995, and 1997 are displayed in **Table 1**.

Methodology: Maine versus US EPA in Determining Statewide Recycling Rate

The US EPA is working to define standards for measuring MSW recycling on a national basis. According to EPA guidelines, construction and demolition debris (CDD) is treated as a category separate from MSW. However, Maine statute includes CDD in its MSW definition. These methodologies were applied to calculate each recycling rate in **Appendix B**. Using guidelines set forth by the US EPA results in a recycling rate of 43%.

TABLE 1

1997 MAINE MSW RECYCLING SUMMARY

<u>Materials</u>	1997	1995	1993
high grade paper	31,470.00	35,672.63	34,763.00
cardboard	214,536.00	138,758.84	67,964.00
newspaper	44,710.00	29,238.45	24,117.00
magazines	3,702.00	13,805.00	5,477.00
mixed paper	12,207.00	24,521.42	52,349.00
other paper	6,465.00	5,112.29	0.00
<u>Total paper</u>	313,090.00	247108.63	184,670.00
clear glass	10,590.00	31,396.00	17,045.00
brown glass	7,060.00	20,263.00	11,648.00
green glass	11,767.00	35,363.00	9,375.00
all other glass	1,734.00	1,168.05	1,204.00
<u>Total glass</u>	31,151.00	88190.05	39,272.00
white goods	122,895.00	68,238.24	84,341.00
aluminum	1,332.00	3,880.00	3,783.00
tin cans	10,693.00	13,823.25	14,406.00
non ferrous	21,572.00	42,520.50	5,010.00
<u>Total Metal</u>	156,492.00	128,461.99	107,540.00
HDPE	4,160.00	3,486.10	1,808.00
PET	6,021.00	4,836.00	0.00
polystyrene	6.00	32.00	0.00
Other	1,042.00	1,915.95	4,707.00
<u>Total Plastic</u>	11,229.00	10,270.05	6,515.00
wood waste	38,402.00	16,657.87	15,240.00
leaves	24,528.00	13,360.60	19,781.00
food waste	23,240.00	17,034.55	5,081.00
<u>Total Organic</u>	86,170.00	47,053.02	40,102.00
tires	30,559.00	8,511.00	13,769.00
CDD	44,209.00	18,311.00	20,508.00
<u>Total Hard to Manage</u>	74,768.00	26,822.00	34,277.00
textiles	1,726.00	873.18	257.00
other nonbulky MSW	5,252.00	8,017.06	8,732.00
<u>TOTAL MSW RECYCLED</u>	679,878.00	556,795.98	421,365.00

Maine still ranks among the top 10% of states ranked by percent of municipal solid waste recycled. This progress is the result of teamwork on the part of many organizations in the public and private sectors and demonstrates that recycling is a major part of the established waste management infrastructure. It also underscores the importance and value of having strong and consistent markets for the recyclables managed by Maine municipalities and businesses. Without strong markets for recyclables, the resulting increased disposal needs of Maine communities could quickly disrupt the existing solid waste management system.

D. Progress Towards Achieving State Goals.

MSW management and the hierarchy

The State of Maine's solid waste management policy is to plan for and implement an integrated solid waste management program based on a management hierarchy. The hierarchy guides public decisions regarding investments in, and the permitting of solid waste management facilities. MRSAs Title 38, chapter 2101, establishes the management priorities within the hierarchy. In descending order, the priorities are:

1. *Reduction, including both the amount and toxicity of waste;*
2. *Reuse (use of a product in same form as the original use);*
3. *Recycling (reprocessing of waste and creation of a new, usable material);*
4. *Composting of biodegradable waste;*
5. *Volume Reduction (waste processing that reduces the volume of waste needing disposal, including incineration and waste-to-energy technology); and*
6. *Land disposal.*

Figure 1 examines MSW management methods for 1997. This breakdown is similar to the management methods for 1995. One notable trend is the continued decrease in landfilling (13% to 10%) and a corresponding slight increase in exports (5.6% to 8.5%). The majority of exported MSW is landfilled.

Municipal Solid Waste Management Methods -- 1997

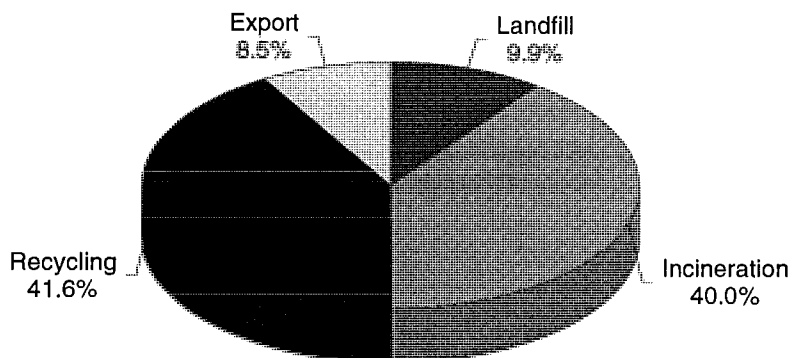


Figure 1

In evaluating the state's progress towards implementing the hierarchy, a comparison was made of MSW generated, recycled (materials reused, composted and recycled) and disposed (landfilled or incinerated) for 1988, 1991, 1993, 1995 and 1997 (**Figure 2**). It demonstrates that recycling has continued to manage a growing portion of the MSW stream.

State Recycling Goal

In 1989, the Maine State Legislature established the goal of recycling 50% of the state's municipal solid waste. This goal was set in response to Maine's crisis in solid waste, which included increasing disposal costs to municipalities and businesses, and decreasing available landfill capacity. The target date to accomplish this was set for 1995 and later amended to 1998. The 1997 state recycling rate is calculated to be 41.6%, short of the 50% goal. In light of this shortfall, it will be necessary to consider reevaluating this goal and also consider establishing a waste reduction goal as part of this recycling goal.

MUNICIPAL SOLID WASTE Generation & Management 1988-1997

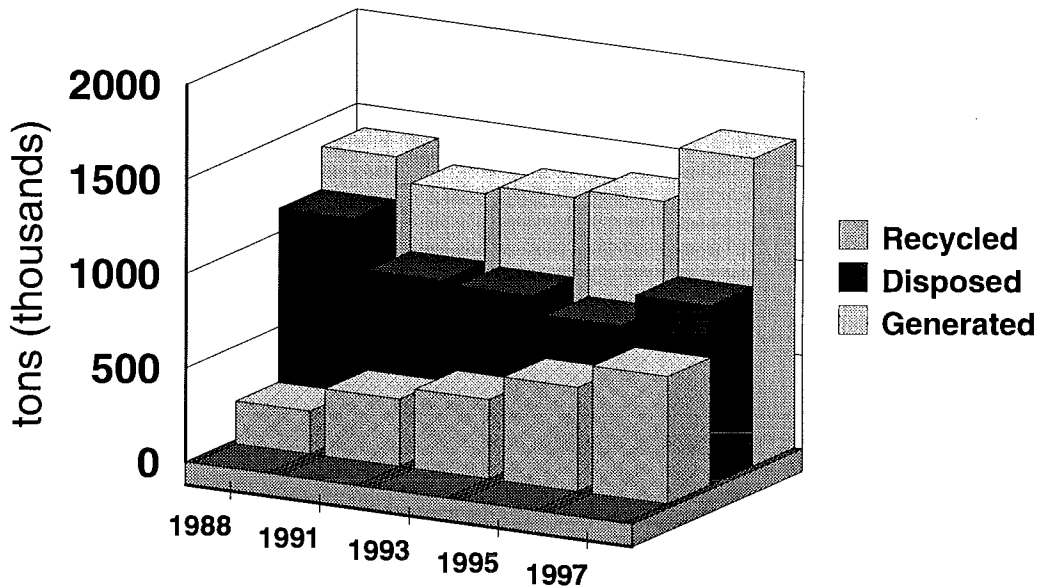


Figure 2

IV. Disposal Capacity

A. Landfill

1. Municipal

A recent survey of MSW landfills indicated that among the 8 MSW landfills, there are approximately 1,670, 000 tons of available capacity². If projections are reassessed according to actual fill rates for MSW landfills (90,000 tons/year) and known capacity, Maine has MSW landfill capacity (including CDD disposed of at MSW landfills) for over 18 years³; or sufficient capacity until **2017**. **Appendix C** provides information on each individual municipal landfill, including fill rates and available capacity.

Total municipal Construction and Demolition Debris (CDD) capacity exists for about 400,000 tons. Some municipalities have much longer landfill life expectancies than others. Landfill capacities range from 5 years to over 40 years; the majority have between 10 and 30 years. Total state CDD municipal capacity will be adequate until about 2008 to 2010.

2. Commercial

The total disposal capacity available at the two commercial landfills in the state is uncertain at this time. Waste Management Inc. (WMI) Crossroads landfill recently received its license for a 12 year expansion, which added 2 million tons of capacity. The owner of the SERF facility in Hampden applied for a permit to expand that landfill to a volume that would add approximately 20 years of life to that facility, based on current fill rates. However, in the recent November election, the voters of that community voted against the change in zoning that was necessary for this expansion.

As of the date of this report, the owner of SERF has applied to the town for a smaller volume expansion that would be built within the limits of the present zoning requirements for landfills. That capacity will be about one-half of the full scale expansion request originally submitted to DEP and the Town of Hampden. Without an expansion, SERF will reach existing capacity by September, 1999.

Alternative scenario: one commercial landfill

The coexistence of two commercial landfills in the state has served the state well, in terms of providing adequate disposal capacity for special waste and construction & demolition debris. It has also provided competition to prevent any concentration of market power in one facility. Because SERF's continued existence after 1999 is uncertain, it is important to consider the

² The survey was conducted in November of 1997 and updated in November of 1998 to account for one year of MSW disposal at the current fill rate among all facilities.

³ The Hatch Hill landfill expansion, which the residents of Augusta recently approved, will add approximately 575,000 tons of capacity to that landfill; this expansion will provide disposal capacity for the next 20 years. The Hatch Hill landfill serves Augusta and 8 surrounding communities.

implications of having only one commercial landfill serve the state. If SERF were permitted to expand its facility as originally planned and WMI continued to operate as it is currently, there would be adequate commercial disposal capacity for at least 15 years. If the SERF landfill were to cease operations in September, 1999, as it would without any further expansion, and WMI received all the waste SERF currently receives, there would be adequate commercial disposal capacity in the state for 6.5 to 8 years, depending on what assumptions are used.⁴

SPO will continue to monitor the progress of the proposed SERF expansion, as well as monitor the proposed regional landfill siting effort in southern Aroostook county. In that landfill application process, the Southern Aroostook Solid Waste Disposal District has linked with a private firm (which could provide operational/management services) in the development of a regional landfill that would service the needs of the southern Aroostook communities.

B. Incineration

Maine's four waste-to-energy facilities receive and manage 40% of Maine's MSW. While they have provided a reliable outlet for MSW, the seasonal nature of waste generation has caused some tonnage overage problems during the summer months. During these peak months (April to October), facilities typically send overages out-of-state to New Hampshire landfills, or landfills as far away as Pennsylvania and Ohio. As noted in the **Appendix D**, average incineration capacity utilization for the state was 107% for 1997.

Front End Process Residue and Ash

One of the issues with incinerators is the need to manage the residuals from processing, specifically front end process residue (FEPR) and ash. In 1997, these materials totaled 258,000 tons (94,953 tons of FEPR; 163,104 tons of ash); this represents about 30% of the total tonnage received by these facilities. All ash is currently being landfilled at one of four landfills in the state. FEPR had been used in conjunction with landfill closure programs; however, since September, 1998, this has not been an available outlet, due to the fact that the landfill closure program is nearing completion.

Currently, ash from Maine Energy and PERC is going to Waste Management Inc., Norridgewock (WMI) and Sawyer Environmental Recovery Facility landfill (SERF), respectively. However, as noted earlier, the SERF landfill will run out of capacity in September, 1999. In addition, RWS has been landfilling its ash in its own landfill; however, at the current fill rate, it will reach capacity within one year. They are exploring an expansion -- without an expansion, they will need to consider using one of the commercial facilities.

⁴ There would be capacity for 8 years if only 50% of FEPR (100,000 tons/year) were landfilled and other options for this material, such as composting, beneficial use and out-of-state disposal options were fully utilized. Alternatively, there would be 6.5 years capacity if all FEPR were landfilled at WMI Crossroads. This projection is also based on the assumption that all other disposal tonnages will continue at the current expected rate.

One waste stream which is likely to have an impact on landfill capacity is front end process residue (FEPR). FEPR is the waste and byproducts, including but not limited to, glass, grit, fine organic matter, and other solid waste removed from the MSW waste stream prior to incineration to increase its btu value. Maine Energy and Penobscot Energy Recovery Company (PERC) together generate over 90,000 tons of FEPR per year. Currently, 1/3 of the FEPR generated by PERC is going to a Canadian landfill; 1/3 is going to municipal facilities (a portion of this is being composted on a trial basis); and 1/3 is going to the SERF landfill. This arrangement, however, is not necessarily permanent. All of Maine Energy's FEPR is going to SERF. Currently, Maine Energy is exploring beneficial use options which could make managing this material more cost effective.

Importing trash

In 1997, Maine incinerators (PERC and Maine Energy) accepted about 138,000 tons of out-of-state MSW while total exports were about 138,000 tons -- Maine's imports and exports are offsetting. All imported MSW went to the 2 private incinerators; Maine's MSW municipal landfills do not accept any out-of-state MSW.

V. Conclusions and Recommendations:

As noted in the 1998 Waste Management and Recycling Plan, the current solid waste infrastructure appears to be effectively managing the state's solid waste. This report focused on the MSW portion of the solid waste stream, although disposal capacity for the two commercial facilities, which manage special waste and construction and demolition debris, was also evaluated. While the infrastructure is relatively stable, two issues warrant further planning and evaluation.

1. Reevaluation of the Statewide Recycling Rate Goal: From 1991 to 1995, the state recycling rate increased from 16% to 41%; however, since 1995, growth has slowed considerably. The state is still a full 8 percentage points shy of the 50% goal set for 1998.

Recommendation: The state should consider reexamining whether the 50% goal is achievable in this short time frame, and, if not, consider an alternative time frame and benchmark.

2. Commercial Landfill Capacity: In the 1998 Waste Management and Recycling Plan, it was projected that there would be adequate commercial landfill capacity for approximately 15 to 20 years, depending on the assumptions. Any changes in the current operations of these facilities, such as the potential changes to SERF as outlined in this report, would have a major impact on the number of years of available disposal capacity for the state.

Recommendation: The state should convene a Task Force for the purpose of evaluating the implications of any possible changes to the current solid waste infrastructure. An important goal of this Task Force will be to not only ensure sufficient disposal capacity, but also the economic competitiveness of those facilities.

APPENDIX A

TOTAL MAINE MSW GENERATION -- 1997

TOTAL MAINE GENERATED WASTE DISPOSED

	MSW	CDD	Total
Landfilled	89,420.00	73,155.00	162,575.00
Incinerated	653,854.00		653,854.00
Exported	97,458.00	41,371.00	138,829.00
TOTAL DISPOSED	840,732.00	114,526.00	955,258.00

TOTAL MAINE RECYCLED MATERIALS

Materials	Adjusted total
Total Paper	313,090.00
Total Metal	156,492.00
Total Glass	31,151.00
Total Plastic	11,229.00
Textiles	1,726.00
Total Organic	86,170.00
Other nonbulky	5,252.00
CDD	44,209.00
tires	30,559.00
TOTAL RECYCLED	679,878.00

TOTAL MSW GENERATED (DISPOSED + RECYCLED)

MAINE STATE DEFINITION (WITH CDD)	1,635,136
EPA DEFINITION (W/O CDD)	1,476,401

APPENDIX B

MAINE STATE RECYCLING RATE -- 1997 Recycling rate = recycled/generated (disposed + recycled)

MAINE STATE GUIDELINES

MSW	840,732.00
plus CDD	114,526.00
MSW w/CDD disposed	955,258.00

MSW recycled	679,878.00
generated	1,635,136.00

RECYCLING RATE	41.6%
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EPA GUIDELINES (CDD not included)

MSW w/o CDD disposed	840,732.00
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MSW recycled	679,878.00
less CDD	(44,209.00)
recycled	635,669.00

generated	1,476,401.00
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RECYCLING RATE	43.06%
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APPENDIX C

1997 -- Municipal Solid Waste Landfill Tonnage

	fill rate(tons/year) MSW	remaining capacity years	tons
Bath landfill	13,800	20	276,000
Little Squaw	1200	20	33,000
West Forks	500	40	19,000
Augusta	26,140	21	546,000
Brunswick	12,300	15	229,647
Fort Fairfield	21,180	12	230,000
Presque Isle	15,500	25	300,000
Lewiston	3,800	25	125,000
Totals (tons)	94420		1758647

	Tons
1998 remaining capacity	1,759,000
1998 fill rate*	95,000
Projected capacity -- beginning 1999	1,664,000

* includes approximately 5,000 tons of construction & demo debris

APPENDIX D

Maine's Four Waste-To-Energy Facilities: 1997 Summary

1. FEES & CAPACITY:

Facility	Current tipping fee - per ton	Daily process capacity (tons/day)	Annual process capacity (tons/year)	% Process capacity utilized (1997-98)
PERC	56	1,100	270,000	102%
Maine Energy	55	1,000	250,000	102%
RWS	58	550	170,000	112%
MMWAC	39-55	200	70,000	130%
State Capacity	*****	2,850	760,000	Avg.: 107%

2. BY-PASS/RESIDUAL AMOUNTS & MANAGEMENT:

Facility	FEPR amount	FEPR destination	Ash amount	Ash destination
PERC*	56,000	18,600: Canada 18,600: Presque Isle (compost pilot /landfill contouring) 18,600: SERF	41,780	SERF - Hampden
Maine Energy*	38,635	38,635: SERF	48,467	WMI - Norridgewock
RWS	*****	*****	55,068	RWS landfill
MMWAC	*****	*****	17,789	Lewiston landfill

* PERC and Maine Energy utilize Refuse Derived Fuel technology; this technology generates both FEPR and Ash. RWS and MMWAC are Mass Burn Technology incinerators which do not generate FEPR.