



VERMONT SOLID WASTE DIVERSION & DISPOSAL -2000

Vermont Solid Waste Management Program

February 1, 2002

Additional Efforts Are Needed To Minimize Increases in Municipal Solid Waste (MSW) Generation and To Achieve The Goal of 50% MSW diversion in 2005.

In 2000, the overall amount of MSW generated in Vermont exceeded previous projections, increasing from 563,564 tons in 1999 to 576,797 tons in 2000. Increases in the amount of construction and demolition waste also occurred. The vigorous economy during 2000 had a direct impact on consumption and increased waste generation. An increase in the overall amount of waste generated coupled with a decline in the amount diverted through reuse, recycling and composting resulted in an increase through recycling and composting. The MSW diversion rate decreased from 35.4% in 1999 to 32.8% in 2000. The MSW disposal rate increased from 64.6% in 1999 to 67.2% in 2000. Other factors which could contribute to the reduction in the diversion rate include significant variability in the amount of materials recycled by Vermont businesses, an increase in the light weighting of packaging, down turns in the recycling markets for various materials, and separate reporting of materials generated in other states and processed in Vermont material recycling facilities.

Despite the slight downturn in the diversion rate, much credit goes to everyone who continue efforts to minimize waste production, recycle and compost!

In 2002 the Solid Waste Management Program plans to review the results of a recent waste composition study and an updated survey of the economic recycling sector and metal processors and determine whether new programs or approaches are needed to target materials which are not being captured by current reuse, recycling and composting programs.

Vermont's Solid Waste Is Disposed at landfills in Vermont, New Hampshire, & New York as well as waste to energy facilities in New Hampshire and New York.

About 72% of Vermont's solid waste, not including biosolids, is disposed in Vermont and about 28% is disposed in New Hampshire and New York. There is about 6.8 years of capacity available at the 2 regional lined landfills located in Vermont, assuming disposal at their current maximum permitted fill rate. If these 2 landfills were to take all of Vermont's solid waste, the remaining years of capacity drops to 5.9 years.

The Agency will continue to monitor disposal capacity in Vermont and the Northeast and will initiate development of a contingency plan if Vermont in-state landfill capacity drops below 2,000,000 tons or 5 years of capacity, if there is a substantial increase in disposal costs or there is a downward trend in the percentage of in-state disposal capacity.

Development of additional landfill capacity in Vermont could provide Vermonters with additional disposal options and help to control disposal costs and illegal burning and dumping.

Vermonters have the opportunity to identify ways to reduce waste generation & increase waste diversion as well as evaluate the need for disposal capacity through development of new solid waste plans over the next 16 months.

The recently adopted Vermont Solid Waste Management Plan identifies critical solid waste issues facing Vermont, establishes goals to address these issues, and defines action plans to reach the goals. By May 1, 2003, all Vermont Municipalities, either individually or as part of a solid waste district or an inter-municipal association are required to develop new solid waste implementation plans (SWIPs) that are consistent with the revised state plan. Development of a SWIP must include participation by citizens, businesses, institutions, and solid waste facility owners. We urge all Vermonters to participate. The resulting local SWIP can only benefit from your participation. Contact your local solid waste district, inter-municipal association or town to learn how you can participate.

Information about the new Vermont Solid Waste Plan and a list of solid waste districts and intermunicipal associations including member towns can be obtained by visiting our web site at:

www.anr.state.vt.us/dec/wastediv/solid

To review the recent Biocycle article about the state of garbage in the US visit their web site at:

www.jgpress.com/biobicycle.htm

For more information:

Contact Julie Hackbarth with the Vermont Department of Environmental Conservation Solid Waste Program at (802) 241-3446

Vermont Solid Waste Diversion and Disposal Report For 2000 Includes The Following Tables:

Table 1 1998, 1999 & 2000 State Wide Diversion Rate. Municipal Solid Waste.

Table 2 Vermont Solid Waste Recycling - 2000. Recycled Materials Reported By Solid Waste Facilities.

Table 3 Vermont Solid Waste Composting - 2000. Materials Reported By Solid Waste Facilities.

Table 4 Vermont Construction & Demolition Waste - 2000. Construction & Demolition Waste Diverted From Disposal Through Acceptable Uses.

Table 5 Generation, Diversion and Disposal. Vermont Municipal Solid Waste. 1998, 1999 & 2000 (Actual) and 2001 - 2005 (Projections).

Table 6 Vermont Solid Waste - 2000. Disposal and Incineration.

Table 7 Vermont Solid Waste - 2000. Disposal and Incineration - Destination.

Table 8 Operating Solid Waste Disposal Capacity in Vermont. Status as of January 2002.

Table 9 2000 Estimated Quantities of Biosolids Managed In and Out of State.

Table 10 Summary of 2000 Vermont HHW/CEG Hazardous Waste Program Activity. (Contact the Solid Waste Program at 802-241-3888 for a copy of Table 10.)

TABLE 1
1998, 1999 & 2000 State Wide Diversion Rate
Vermont Municipal Solid Waste

Reuse, Recycling & Composting (Tons)			
	<u>1998</u>	<u>1999</u>	<u>2000</u>
Reuse facilities ¹	260	320	460
Bottle Returns reused ²	4,000	4,000	4,000
Recycling processors and transfer ³	87,206 ⁸	89,927 ⁸	78,956 ⁹
Bottle returns recycled ²	16,100	16,100	16,100
Economic recycling ⁴	32,160	32,160	32,160
Metal processors ^{4,10}	42,780	42,780	42,780
Backyard Composting	7,098 ⁵	7,398 ⁵	7,656 ⁵
Composting Facilities	5,501 ⁷	5,644 ⁷	5,738
Exempt & Categorical Composting	<u>825</u>	<u>972</u>	<u>1,551</u>
Total:	195,930	199,301	189,401

<u>Disposal - Municipal / Mixed Solid Waste (Tons)</u>			
	<u>1998</u>	<u>1999</u>	<u>2000</u>
municipal/mixed solid waste ⁶	374,820	364,263	387,396

MSW Diversion - 1998, 1999 & 2000

Diversion = (Reuse + Recycling + Composting) / (Reuse + Recycling + Composting + Disposal)

1998 MSW Diversion = 195,930 / (195,930 + 374,820) = 34.3%

1999 MSW Diversion = 199,301 / (199,301 + 364,263) = 35.4%

2000 MSW Diversion = 189,401 / (189,401 + 387,396) = 32.8%

Notes:

- ¹ Based on data from Vermont Business Material Exchange.
- ² 1996 data prepared by Northbridge Environmental Management Consultants.
- ³ Includes tonnage for cans, glass, cardboard, newspaper, other paper, PETE, HDPE, other plastic, mixed fibers, mixed containers, metals and "other recyclables" which include a variety of materials.
- ⁴ 1994 data for ANR report "Vermont's Solid Waste Diversion In 1994, August 1996."
- ⁵1998 6100 tons (1994 data) plus 998 tons (estimated from additional 5320 bins sold since 1994 handling 375# of food waste per bin per year).
- ⁵1999 1998 estimate plus 300 tons (estimated of additional 1600 bins sold in 1999 handling 375# of food waste per bin per year).
- ⁵2000 1999 estimate plus 258 tons (estimated of additional 1378 bins sold in 2000 handling 375# of food waste per bin per year).
- ⁶ Mixed solid waste includes some C&D in mixed loads from transfer stations.
- ⁷ 1998 & 1999 figures adjusted in 2001 report due to correction made to reports for one composting facility.
- ⁸ 1998 & 1999 figures adjusted in 2001 report due to additional data for one recycling processor.
- ⁹ Changes in reporting requirements in 2000 included the reporting of materials from other state that was processed at Vermont Recycling Processing Facilities (approx. 7,000 tons in 2000). See Table 2 for details. This improvement in reporting has resulted in a reduction in tons of Vermont materials processed by these facilities. Such a practice most likely occurred in 1998 and 1999 however the amount is not known.
- ¹⁰ "Economic" recycling is the recycling done by businesses that process and market their recyclables directly to end market.

**TABLE 2
VERMONT SOLID WASTE RECYCLING - 2000
RECYCLED MATERIALS REPORTED BY SOLID WASTE FACILITIES ¹
(TONS)**

MATERIAL	MATERIALS RECYCLING FACILITIES (MRF'S) ³			STORAGE AND TRANSFER FACILITIES ⁴		
	(Other States)	(Vermont ⁶)	(Total)	(Transferred to VT MRF's)	(Direct to Market ^{5,6})	(Total)
CO-MINGLED CONTAINERS	259	1,284	1,543	1,940	5	1,945
CANS	137	1,769	1,906	556	64	620
GLASS	405	11,071	11,476	1,558	129	1687
CO-MINGLED FIBERS	430	1,934	2,364	4,004	51	4055
CORRUGATED CARDBOARD	2,592	21,751	24,343	4,818	206	5024
NEWSPAPERS	886	16,222	17,108	2,916	155	3071
OTHER PAPER	2,157	7,592	9,749	2,238	341	2579
PETE (#1)	35	548	583	112	0	112
HDPE (#2)	75	1,044	1,119	207	0	207
OTHER PLASTIC		30	30	0	19	19
METAL		2,407	2,407	0	11,872	11,872
OTHER RECYCLABLES ²		385	385	890	77	967
FACILITY TOTAL:	6,976	66,037	73,013	19,239	12,919	32,158

TOTAL TONS OF MATERIAL INCLUDED IN 2000 MSW DIVERSION RATE:

66,037 (MRF'S⁶) + 12,919 (STORAGE & TRANSFER - DIRECT TO MARKET⁶) = 78,956 TONS

¹ Data obtained from solid waste management facility quarterly reports submitted to the Vermont State Solid Waste Management Program for calendar year 2000.

² Other Recyclables" includes miscellaneous materials including textiles, mixed fibers, books, and any of the materials listed in the table above.

³ Estimated tons of materials processed by Vermont material recycling facilities. These facilities process recyclables collected at locations throughout Vermont including the storage and transfer facilities for which data is summarized above in columns 5,6, & 7. Several of these facilities also process materials from NH & NY.

⁴ Estimated tons of materials for recycling storage and transfer facilities transferred to a material recycling facility for further treatment or directly to market. Categorical recycling facilities are not included.

⁵ Estimated totals of materials which are handled by recycling storage and transfer facilities and shipped directly to market without being transferred to a material recycling facility for further processing or directly to market.

⁶ Categorical recycling facilities are not included. Materials & tonnage included in the calculation of the state wide diversion rate for municipal solid waste.

TABLE 3

**VERMONT SOLID WASTE COMPOSTING - 2000
MATERIALS HANDLED BY VERMONT SOLID WASTE FACILITIES ¹**

MATERIAL	TONS
FOOD WASTE ²	2,654
PAPER ²	469
LEAF AND YARD WASTE ²	2,208
WOOD WASTE ²	407
LIQUID FOOD WASTE	3,867
TOTAL TONS COMPOSTED:	9,605

¹ Data obtained from solid waste management facility quarterly reports submitted to the Vermont State Solid Waste Management Program for calendar year 2000. Categorical composting facilities are not included.

² Materials & tonnage included in the calculation of the state wide diversion rate for municipal solid waste - 5,738 TONS.

Prepared by the Vermont Solid Waste Management Program (802) 241-3444 1/4/02

TABLE 4

VERMONT CONSTRUCTION & DEMOLITION WASTE - 2000
CONSTRUCTION & DEMOLITION WASTE DIVERTED FROM DISPOSAL
THROUGH ACCEPTABLE USES¹
TONS REPORTED BY SOLID WASTE FACILITIES ²

MATERIALS	(TONS)
CONSTRUCTION/DEMOLITION WASTE (C&D)³	10,975
WOOD ³	583
DEBRIS RECYCLED AS FILL	2670
GROUND C&D USED IN LANDFILLS ³	4580
TOTAL TONS:	18,808
³ TOTAL TONS OF MATERIALS FOR C&D ACCEPTABLE USE DIVERSION RATE:	16,138

2000 C&D Acceptable Use Rate = (Reuse⁴ + Acceptable Use) / (Reuse⁴ + Acceptable Use + Disposal)

2000 C&D Disposal: 81,962 Tons

2000 C&D Acceptable Use Rate = 16,138 / (16,138 + 81,962) = 16.5%

- ¹ Data obtained from solid waste management facility quarterly reports submitted to the Vermont State Solid Waste Management Program for calendar year 2000.**
- ² This data represents estimated state totals for these materials handled by Vermont material recycling facilities and recycling, storage and transfer facilities before being transferred to a C&D processing facility for further treatment or directly for use.**
- ³ Materials & tonnage included in the calculation of an acceptable use rate for construction & demolition waste.**
- ⁴ Currently data is not collected for C&D reuse operations.**

TABLE 5

**GENERATION, DIVERSION AND DISPOSAL
VERMONT MUNICIPAL SOLID WASTE
1998, 1999 & 2000 (ACTUAL)
2001 - 2005 (PROJECTIONS IN ORDER TO REACH 50% DIVERSION RATE)
UPDATED 1/4/02**

MSW Generation, Diversion & Disposal - Actual & Projections (Tons) ³								
	1998	1999	2000	2001	2002	2003	2004	2005
Generation ¹	570,750	563,564	576,797	585,449	594,231	603,144	612,191	621,374
Diversion	195,930	199,301	189,401	213,658	237,915	262,172	286,429	310,687
Disposal	374,820	364,263	387,396	371,791	356,316	340,972	325,762	310,687
Population Estimate ²	590,579	593,740	608,827	611,871	614,930	618,005	621,095	624,201
Per Capita MSW Generation (Tons/Year) (Pounds/Day)	0.97 5.30	0.95 5.20	0.95 5.19	0.96 5.24	0.97 5.30	0.98 5.35	0.99 5.40	1.00 5.46
Per Capita MSW Diversion (Tons/Year) (Pounds/Day)	0.33 1.82	0.34 1.84	0.31 1.70	0.35 1.91	0.39 2.12	0.42 2.32	0.46 2.53	0.50 2.73
Per Capita MSW Disposal (Tons/Year) (Pounds/Day)	0.64 3.48	0.61 3.36	0.64 3.49	0.61 3.33	0.58 3.18	0.55 3.02	0.52 2.87	0.50 2.73

% Of MSW Waste Generation ³								
	1998	1999	2000	2001	2002	2003	2004	2005
Generation	100%	100%	100%	100%	100%	100%	100%	100%
Diversion	34.3%	35.4%	32.8	36%	40%	43%	47%	50%
Disposal	65.7%	64.6%	67.2	64%	60%	57%	53%	50%

NOTES:

¹ MSW generation as projected in "Characterization of Municipal Solid Waste In The United States: 1998 Update", Franklin Assoc. August 1999. Page 132, Table 39. MSW generation is projected to increase 1.5 percent per year between 2000 and 2005.

² Vermont estimate - 0.5% increase in population from 1998 to 1999. Increase projected at this rate through 2005. US Census Bureau - ST-99-1.
www.census.gov/population/www/estimates/statepop.html

³ 1998 & 1999, actual. 2000 - 2005, projected to achieve goal of 50% diversion in the year 2005.

TABLE 6

**Vermont Solid Waste - 2000
Disposal & Incineration**

DESTINATION	TYPE OF WASTE					Waste Used in Landfill ⁽²⁾
	MSW (Tons)	C&D/Wood (Tons)	Other ⁽¹⁾ (Tons)	Total (Tons)	% Disposed	
In-state						
Landfill	265,850 ⁽⁵⁾	65,208 ⁽³⁾	5,054	336,112	71%	24,926
Incineration ⁽⁴⁾	0	6,216	0	6,216	1%	
Subtotal:	265,850	71,424	5,054	342,328	72%	24,926
Out-of-State						
Landfill	61,102	9,859	1,451	72,412	15%	2,241
Incineration	60,444	682	280	61,406	13%	
Subtotal:	121,546	10,541	1,731	133,818	28%	2,241
Total:	387,396	81,965	6,785	476,146	100%	27,167
<p>(1) Includes asbestos waste, bulky waste, dead animals, industrial waste, petroleum contaminated soil, medical waste and "other" waste. Total tons includes 98 tons from other states. Does not include 10,526 tons of biosolids disposed in Vermont landfills during 2000 of which 7,225 tons was from other states.</p>						
<p>(2) Waste used in landfills - Petroleum contaminated soils (4,718 tons), foundry sand (3,712 tons), biosolids (7,485 tons), paper sludge (5,934 tons) and other waste (407 tons) used as alternative cover materia of which 3,672 tons was waste from other states. Ground C&D (2,339 tons) and crushed glass (330 tons) used as road base material at Vermont landfills and as alternative cover material (2,241 tons) at an out of state landfill.</p>						
<p>(3) Does not include 377 tons of C&D from Massachusetts disposed at the Burgess landfill.</p>						
<p>(4) 6,188 tons of clean wood waste was collected by the Chittenden Solid Waste District and chipped and burned for energy recovery at the McNeil generating plant. 28 tons of clean wood was reported to have been burned at transfer station sites.</p>						
<p>(5) May include approximately 1200 tons of MSW from other states</p>						

TABLE 7

**Vermont Solid Waste - 2000
Disposal & Incineration - Destinations For Vermont Waste**

STATE	FACILITY	MSW & Mixed (Tons)	C&D and Wood (Tons)	Other⁽¹⁾ (Tons)	Total	Waste Used in Landfill⁽²⁾
Vermont	Waste USA Landfill	163,369	42,387	2,813	208,569	14,018
	WSI Landfill ⁽⁵⁾	99,854	16,179	1,499	117,532	9,230
	3 - 1000 ton unlined landfills	2,627	194		2,821	1,678
	Burgess C&D Landfill⁽³⁾		6,284	742	7,026	
	On-site disposal clean wood at transfer stations		164		164	
	On-site burning of clean wood at transfer stations		28		28	
	McNeil - Burn clean wood		6,188		6,188	
	2000 TOTAL IN- STATE:	265,850	71,424	5,054	342,328	24,926
Massachusetts	Haverhill Waste To Energy	1,241			1,241	
	Pittsfield Waste To Energy	335			335	
	Warwick Transfer Station		3		3	
	Subtotal MA:	1,576	3		1,579	

New Hampshire	Wheelabrator Claremont Waste To Energy ⁽⁴⁾	22,987	517	91	23,595	
	Keene Transfer Station	282	106		388	
	Lebanon Landfill	14,783		167	14,950	2,241
	North Country Landfill	6,030	1,518	1,246	8,794	
	Mt. Carberry Landfill	906			906	
	Subtotal NH:	44,988	2,141	1,504	48,633	2,241
New York	Adirondak Resource Recovery	35,881	165	189	36,235	
	Clinton Co. Landfill	33,511	8,022		41,533	
	Seneca Meadows Landfill	5,590			5,590	
	Waste Management of E. NY		210	38	248	
	Subtotal NY:	74,982	8,397	227	83,606	
	2000 TOTAL OUT OF STATE	121,546	10,541	1,731	133,818	2,241
	2000 TOTAL - IN-STATE & OUT-OF-STATE	387,396	81,965	6,785	476,146	27,167

(1) Includes asbestos waste, bulky waste, dead animals, industrial waste, petroleum contaminated soil, medical waste and "other" waste. Does not include 10,526 tons of biosolids disposed in Vermont landfills during 2000.

(2) Waste used in landfills - Petroleum contaminated soils (4,718 tons), foundry sand (3,712 tons), biosolids (7,485 tons) paper sludge (5934 tons) and other waste (407 tons) used as alternative cover material of which 3,672 tons were wastes from other states. Ground C&D (2,339 tons) and crushed glass (330 tons) used as road base material at Vermont landfills and as alternative cover material (2,241 tons) at an out of state landfill.

(3) Does not include 377 tons of C&D from out of state.

(4) Does not include incinerator ash disposed at the NH/VT Solid Waste Project Ash Landfill attributed to VT waste burnt at the Wheelabrator Claremont Incinerator.

(5) May include approximately 1200 tons of waste from other states.

TABLE 8

**Operating Solid Waste Disposal Capacity in Vermont ⁽¹⁾
Status as of January 2002**

MSW Landfills ⁽²⁾	Remaining Capacity (tons)	Maximum Permitted Fill Rate 2001		Actual Fill Rate For 2000 Permit Year (tons/year)	Remaining Years of Capacity
		(tons/day)	(tons/year)		
Waste USA, Coventry (Phase I, II, III)	2,246,664 ⁽⁷⁾	1,500	240,000	239,595 ⁽³⁾ (4/1/00 - 3/31/01) (permitted max - 180,000 tons)	9.4 ⁽⁴⁾
WSI 3 ⁽⁵⁾ , Moretown (Cell 2)	546,000	400	172,000	120,121 ⁽³⁾ (1/1/00 - 12/31/00) (permitted max - 134,000 tons)	3.2 ⁽⁴⁾
Totals	2,792,664	1,900	412,000	359,716	6.8⁽⁴⁾
Vermont Solid Waste Requiring Disposal (2000)				476,146	5.9⁽⁶⁾

(1) Does not include other capacity certified by ANR that has not been developed (Northwest District & Greater Upper Valley District) although haven't received Act 250 permits, capacity proposed for permitting by one privately owned landfill, or potential capacity involved in other legal proceedings (Chittenden Solid Waste District).

(2) Does not include the three 1000 TPY unlined landfills operating in Bristol Town, Shaftsbury, and Salisbury.

(3) Actual fill rate for permit years includes biosolids disposed.

(4) Based on maximum yearly permitted fill rate.

Note: In addition to waste disposed, landfills received wastes that were used in the landfill as alternative cover or road base material: Waste USA landfill - 14,018 tons, WSI Landfill - 9,230 tons.

(5) WSI = Waste Systems International, Inc.

(6) Years of capacity remaining if all Vermont MSW, sludges, construction/demolition debris, and "other waste" were to be disposed of in-state. Does not include biosolids.

(7) Based on Sept 2001 survey data, includes estimate for Phase III Cell II.

TABLE 9

**2000 Estimated Quantities of Biosolids Managed In and Out of State
(As reported by facility generators)
Amounts are in wet tons at 15% solids⁽¹⁾**

Management Option	In-State (wet tons)	Out-of-state (wet tons)	Total (wet tons)	Percent of Total	Percent Managed
Beneficial Uses:					
Land Application	6,027	213	6,240	11%	
Composted	3,833	29,780	33,613	62%	
Subtotal	9,860	29,993	39,853		73%
Non-Beneficial Uses:					
Landfill	10,467	780	11,247	21%	
Incineration	0	3,540	3,540	6%	
Subtotal	10,467	4,320	14,787		27%
Total:	20,327	34,313	54,640		100 %
Percent of Total In & Out of State	37%	63%			

(1) All reported quantities have been converted to wet tons at 15% solids to allow meaningful comparisons. As a result, these tonnages may differ from the scalehouse tonnages reported by the receiving facilities.